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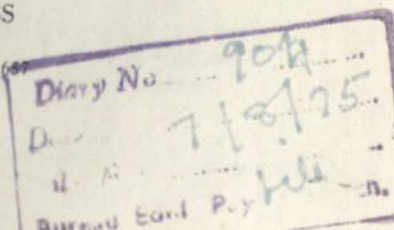
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1. Observation and training of fundamental habits in young children—E. A. BOTT, W. E. BLATZ, N. CHANT, H. BOTT
- 2 & 3. Determination of a content of the course in literature of a suitable difficulty for junior and senior high school students—M. C. BURCH
- 4 & 5. Methods for diagnosis and treatment of cases of reading disability—M. MONROE
6. The relative effectiveness of lecture and individual reading as methods of college teaching—E. B. GREENE

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1. The age factor in animal learning: I. Rats in the problem box and the maze—C. P. STONE
2. The effect of delayed incentive on the hunger drive in the white rat—E. L. HAMILTON
3. Which hand is the eye of the blind?—J. M. SMITH
4. The effect of attitude on free word association-time—A. G. EKDAHL
5. The localization of tactual space: A study of average and constant errors under different types of localization—L. E. COLE
6. The effects of gonadectomy, vasotomy, and injections of placental and orchic extracts on the sex behavior of the white rat—H. W. NISSEN

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1. Learning and growth in identical infant twins: An experimental study by the method of co-twin control—GESELL AND H. THOMPSON
2. The age factor in animal learning: II. Rats on a multiple light discrimination box and a difficult maze—C. P. STONE
3. The acquisition and interference of motor habits in young children—E. MCGINNIS
4. A vocational and socio-educational survey of graduates and non-graduates of small high schools of New England—A. D. MUELLER
- 5 & 6. A study of the smiling and laughing of infants in the first year of life—R. W. WASHBURN

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1. Tensions and emotional factors in reaction—E. DUFFY
2. Teacher influence on class achievement: A study of the relationship of estimated teaching ability to pupil achievement in reading arithmetic—H. R. TAYLOR
- 3 & 4. A study of the effect of inverted retinal stimulation upon spatially coordinated behavior—P. H. EWERT
5. A study of the mental development of children with lesion in the central nervous system—E. E. LORD
6. An experimental study upon three hundred school children over a six-year period—N. D. M. HIRSCH

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2. Race and social differences in performance tests—S. D. PORTEUS, *et al.*
3. Language and growth: The relative efficacy of early and deferred vocabulary training, studied by the method of co-twin control—L. C. STRAYER
4. Eye-movements and optic nystagmus in early infancy—J. M. MCGINNIS
- 5 & 6. Reactions of kindergarten, first-, and second-grade children to constructive play materials—L. FARWELL

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- 1 & 2. The status of the first-born with special reference to intelligence—H. H. HSIAO
- 3 & 4. An experimental study of bright, average, and dull children at the four-year mental level—H. P. DAVIDSON
5. An historical, critical, and experimental study of the Seashore-Kwalwasser test battery—P. R. FARNSWORTH
6. A comparison of difficulty and improvement in the learning of bright and dull children in reproducing a description—F. T. WILSON

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1. A comparative study of a group of southern white and negro infants—M. B. MCGRAW
- 2 & 3. An experimental study of prehension in infants by means of systematic cinema records—H. M. HALVERSON
4. The limits of learning ability in kittens—A. M. SHUEY
- 5 & 6. The effect of habit interference upon performance in maze learning—O. W. ALM

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1. General factors in transfer of training in the white rat—T. A. JACKSON
2. The effect of color on visual apprehension and perception—M. A. TINKER
3. The reliability and validity of maze experiments with white rats—R. LEEPER
4. A critical study of two lists of best books for children—F. K. SHUTTLEWORTH
- 5 & 6. Measuring human energy cost in industry: A general guide to the literature—R. M. PAGE

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1. Family resemblances in verbal and numerical abilities—H. D. CARTER
2. The development of fine prehension in infancy—B. M. CASTNER
- 3 & 4. The growth of adaptive behavior in infants: An experimental study at seven age levels—H. M. RICHARDSON
- 5 & 6. Differential reactions to taste and temperature stimuli in newborn infants—K. JENSEN

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1. A critique of sublimation in males: A study of forty superior single men—W. S. TAYLOR
2. A study of the nature, measurement, and determination of hand preference—H. L. KOCH, *et al.*
3. The growth and decline of intelligence: A study of a homogeneous group between the ages of ten and sixty—H. JONES AND H. S. CONRAD
4. The relation between the complexity of the habit to be acquired and the form of the learning curve in children—M. L. MATTSON
5. Eating habits in relation to personality development of two- and three-year-old children: A study of six children in two nursery schools—A. A. ELIOT
6. Coordinating mechanisms of the spinal cord—O. C. INGEBRITSEN

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2. A study of triplets: including theories of their possible genetic relationships—F. N. ANDERSON AND N. V. SCHEIDEMANN
3. The objective measurement of emotional reactions—H. V. GASKILL
4. Development of behavior in the fetal cat—J. D. CORONIOS
5. A study of certain language developments of children in grades four to twelve, inclusive—L. L. LABRANT
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2. Motor learning of children in equilibrium in relation to nutrition—E. L. BEEBE
3. Discrimination limens of pattern and size in the goldfish *Carassius auratus*—J. B. ROWLEY
4. Limits of learning ability in the white rat and the guinea pig—B. F. RIESS
- 5 & 6. The limits of learning ability in rhesus monkeys—H. A. FJELD

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2. An eye-movement study of objective examination questions—A. FRANSEN
3. An experimental study of constitutional types—O. KLINEBERG, S. E. ASCH, AND H. BLOCK
4. The development of a battery of objective group tests of manual laterality, with the results of their application to 1300 children—W. N. DUROST
- 5 & 6. An experimental study in the prenatal guinea-pig of the origin and development of reflexes and patterns of behavior in relation to the stimulation of specific receptor areas during the period of active fetal life—L. CARMICHAEL

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1. Organization of behavior in the albino rat—R. L. THORNDIKE
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3. The limits of learning ability in cebus monkeys—A. M. KOCH
4. Nature-nurture and intelligence—A. M. LEAHY
5. On intelligence of epileptic children—E. B. SULLIVAN AND L. GAHAGAN
6. A study of the play of children of preschool age by an unobserved observer—D. L. COCKRELL

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2. The process of learning to dress among nursery-school children—C. B. KEY, M. R. WHITE, M. P. HONZIK, A. B. HEINEY, AND D. ERWIN
3. A study of the present social status of a group of adults, who, when they were in elementary schools, were classified as mentally deficient—W. R. BALLER
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- 5 & 6. Studies in aggressiveness—L. BENDER, S. KEISER, AND P. SCHILDER

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4. Behavior problems in the children of psychotic and criminal parents—L. BENDER
5. Domination and integration in the social behavior of young children in an experimental play situation—H. H. ANDERSON
6. The sequential patterning of prone progression in the human infant—L. B. AMES

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2. Graphic representation of a man by four-year-old children in nine prescribed drawing situations—P. F. GRIDLEY
3. Differences between two groups of adult criminals—R. S. TOLMAN
4. A comparative study by means of the Rorschach method of personality development in twenty pairs of identical twins—E. TROUP
5. Individual differences in the facial expressive behavior of preschool children: A study by the time-sampling method—C. SWAN

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1. Some light on the problem of bilingualism as found from a study of the progress in mastery of English among preschool children of non-American ancestry in Hawaii—M. E. SMITH
2. Domination and social integration in the behavior of kindergarten children and teachers—H. H. ANDERSON
3. The capacity of the rhesus and cebus monkey and the gibbon to acquire differential response to complex visual stimuli—W. E. GALT
4. The social-sex development of children—E. H. CAMPBELL

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1. Measuring human relations: An introduction to the study of the interaction of individuals—E. D. CHAPPEL
2. Aggressive behavior in young children and children's attitudes toward aggression—M. D. FITE
3. Student attitudes toward religion—E. NELSON
4. The prediction of the outcome-on-furlough of dementia praecox patients—J. S. JACOB
5. Significant characteristics of preschool children as located in the Conrad inventory—K. H. READ
6. Learning by children at noon-meal in a nursery school: Ten "good" eaters and ten "poor" eaters—J. B. MCCAY, E. B. WAKING, AND P. J. KRUSE

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2. Infant development under conditions of restricted practice and of minimum social stimulation—W. DENNIS
3. An analysis of the mental factors of various age groups from nine to sixty—B. BALINSKY
4. Factors influencing performance on group and individual tests of intelligence: I. Rate of work—M. W. BENNETT
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3. An experimental study of the factors of maturation and practice in the behavioral development of the embryo of the frog, *Rana pipiens*—A. FROMME
4. The Fels child behavior scales—T. W. RICHARDS AND M. P. SIMONS
5. Measurement of the size of general English vocabulary through the elementary grades and high school—M. K. SMITH
6. Stereotypes in the field of musical eminence—P. R. FARNSWORTH

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1. A study of factors determining family size in a selected professional group—J. C. FLANAGAN
2. A genetic study of geometrical-optical illusions—A. WALTERS
3. Interpretation of behavior-ratings in terms of favorable and unfavorable deviations: A study of scores from the Read-Conrad Behavior Inventory—K. H. READ AND H. S. CONRAD
4. Are there any innate behavior tendencies?—J. B. SCHOELLAND
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2. Variations in the consistency of the behavioral meaning of personality test scores—M. KORNREICH
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4. Socio-economic contrasts in children's peer culture prestige values—B. POPE
5. A critical review of the stability of social acceptability scores obtained with the partial-rank-order and the paired-comparison scales—S. A. WITRYOL AND G. G. THOMPSON
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3. Operational exploration of the conceptual self system and of the interaction between frames of reference—M. EDELSON AND A. E. JONES

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5. The relation of cortical potentials to perceptual functions—C. CHYATTE
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7. Measuring personality in developmental terms: The Personal Preference Scale—M. H. KROUT AND J. K. TABIN
8. Some relations between techniques of feeding and training during infancy and certain behavior in childhood—A. BERNSTEIN

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3. Measurement of authoritarianism and its relation to teachers' classroom behavior—H. M. MCGEE
4. The formal aspects of schizophrenic verbal communication—B. MIRIN

5. A study in an aspect of concept formation, with subnormal, average, and superior adolescents—H. N. HOFFMAN
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3. Spread of effect: A critical review—M. H. MARX

4. Stress, fantasy, and schizophrenia: A study of the adaptive processes—O. J. B. KERNER
5. The attitude structure of the individual: A Q-study of the educational attitudes of professors and laymen—F. N. KERLINGER

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3. The influence of social context on impulse and control tendencies in preadolescents—G. H. ZUK
4. Tender-mindedness versus tough-mindedness in psychology: A reexamination—H. WINTHROP

5. A method for the comparison of groups: A study in thematic apperception—L. C. SCHAW AND W. E. HENRY
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4. The role of mass media and the effect of aggressive film content upon children's aggressive responses and identification choices—R. S. ALBERT

5. Interest in persons as an aspect of sex difference in the early years—E. W. GOODENOUGH
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INFLUENCE OF VERBAL CONTENT AND INTONATION ON MEANING ATTRIBUTIONS OF FIRST- AND SECOND-LANGUAGE SPEAKERS*¹

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SUMMARY

Perceptions of a series of recorded verbal evaluation statements comprising all combinations of three levels of content (positive, neutral, negative) and three levels of intonation (pleased, indifferent, displeased) were obtained from groups of adolescents in America and India. The recorded statements were all in English, a second language for the Indian subjects. The major finding was that the Indians were more likely to rely on content for judgments of affective meaning, while the Americans relied relatively more on intonation for judgments of affective meaning. This finding was attributed to differences in amount of experience with the language. It was also found that the American girls were generally more responsive to intonation than the American boys, while the Indian boys were more responsive to intonation than the Indian girls.

A. INTRODUCTION

In a previous paper (3), evidence of age differences in the utilization of different channels of verbal communication was reported. In attributing meaning to a series of recorded verbal evaluation statements, American children were found to rely almost exclusively on the statements' "content" for judgments of objective meaning; they were also predominantly influenced by content (as compared with "intonation" or a content \times intonation interaction) in making judgments about the underlying affective

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¹ The authors wish to express their appreciation for the cooperation given them in this research by the principals, staff, and students at All Saints High School and Mahobbia Girls High School in Hyderabad City, India, and at St. Michaels High School and Immaculata High School in Chicago, Illinois. Reprints may be obtained from the first author at the address shown at the end of this article.

meaning associated with the statements. Adults also relied heavily on content for judgments of objective meaning, but were much more influenced by intonation in making attributions of the underlying affective meaning.

It was suggested in that paper that adults may have been more responsive to the statements' intonation as a result of their greater accumulation of experience as users of the language, and that a relatively large amount of such experience may be necessary to learn appropriate interpretations of the relatively subtle and inefficiently coded messages conveyed by intonation. If this explanation is correct, it suggests that the differences in that study did not represent "developmental" differences, but rather differences in amount of relevant experience. Thus, it might be predicted that speakers of the same ages but with different amounts of experience with a language should show differences in the usage of intonation parallel to those found in the previous study.

The present study constitutes a test of this prediction. It uses the same methods as in the previous study and compares the usage of the communication channels by a group of adolescents for whom the language spoken is a first language with the usage by another group, of similar age, for whom it is a second language.

B. METHOD

1. *Subjects*

Data were collected from four secondary schools, two in Hyderabad City, India, and two in Chicago, Illinois. The Indian data were collected during a trip to India by the second author. This sample consisted of 20 boys, ranging in age from 14-16, and 20 girls, ranging in age from 15-17. They attended noncoeducational schools in which all of the instruction was conducted in English. Their first languages were: Urdu, 70%, Hindi, 20%, Telugu, 5%, and Punjabi, 5%.

For comparison with this Indian sample, two subsamples were taken from data previously collected (3). It was not possible to match the age range exactly for the girls' samples, but the group from the American sample with the most similar age range was selected—32 12th grade girls ranging from 16-18. The boys' sample selected from the American data consisted of 28 10th graders, ranging in age from 14-16 (thus matching the Indian boys' age range). The American sample was drawn from two Catholic noncoeducational schools.

2. Procedure

Each subject, in an individual session, listened to a tape recording which was described as that of a teacher making comments to different children in an art class. The tape, made by an amateur actress, consisted of a series of verbal evaluation statements encompassing all combinations of three levels of content (positive, neutral, negative), and three levels of intonation (pleased, indifferent, displeased). Four different statements for each content level were each repeated once with each of the three intonations, for a total of 36 reinforcers. The positive content comments were "Excellent," "Very good," "I like that," and "That's coming along well." The neutral content comments were "Take your time," "I see," "Interesting," and "That could have been worse." The negative content comments were "Not very good," "Pretty bad," "Not that way," and "You're not too good at this."

These 12 comments were selected for content from a list of 78 such comments on the basis of judgments made by 15 adults. Judgments as to the adequacy of representation of the three intonation levels were made by the first author and a colleague during the recording of the statements. The fact that in this and all prior studies using these stimuli, both content and intonation manifested strong main effects on subject perceptions with clear and orderly differences between the manipulated levels, is evidence for the validity of these variables.

The statements were presented to the subjects in a random order. The tape recorder was stopped after each comment, and the subject was asked three questions, each with five possible responses:

Question 1: What did the teacher mean? The drawing is 1) very bad, 2) sort of bad, 3) so-so, 4) pretty good, 5) very good.

Question 2: How does the child feel? He feels 1) very unhappy, 2) sort of unhappy, 3) neither way especially, 4) pretty happy, 5) very happy.

Question 3: Does the teacher like or dislike the child? The teacher 1) dislikes him very much, 2) dislikes him a little, 3) neither likes nor dislikes him, 4) likes him a little, 5) likes him very much.

The subjects were shown cards with each question and the possible responses to aid them in making their selections.

C. RESULTS

Cell scores were derived for each subject's responses to each question by summing his ratings for the four reinforcers within each of the nine content-intonation conditions. The possible range of these scores was 4-20,

with four indicating maximally negative perceptions, and 20 maximally positive.

Reliability was assessed, for each of these cell scores, by applying the Spearman-Brown formula to the average interitem correlation for the four statements comprising each content-intonation cell. For question 1, the reliability coefficients for the nine cells ranged from .32 to .72, with the median at .48; for question 2, they ranged from .18 to .69, with the median at .51; and for question 3, they ranged from .35 to .83, with the median at .51.

In order to establish the overall significance of effects, analyses of variance were computed with each of the three perception question scores as dependent variables, and with sex, culture, content, and intonation as independent variables. These analyses combined repeated and nonrepeated measures, following computation procedures outlined by Winer (6). Highly significant main effects ($p < .001$) were obtained for culture, content, and intonation with each of the three questions. These reflected, respectively, somewhat more positive perceptions for the Indian than the American adolescents, and perceptions which corresponded with the manipulated levels of the reinforcer variables (content and intonation). With the exception of significant content \times intonation interactions ($p < .001$ for each question) similar to those obtained in our prior studies (3, 4, 5), all of the interactions which were found involved culture. These included culture \times content interactions with questions 1 and 2 ($p < .01$, $< .001$), a sex \times culture \times content interaction with question 1 ($p < .01$), sex \times culture \times intonation effects with each of the three questions ($p < .001$, $< .05$, $< .01$), and culture \times content \times intonation effects for each of the three questions ($ps < .001$).

In order to investigate these interactions and to focus on the relative influence of content and intonation on the perceptions of each of the aspects of meaning for the adolescents from each culture, an additional set of analyses of variance was done separately for each culture group and for each sex group within each culture, with content and intonation as the only independent variables.

For the American groups, the three effects (content, intonation, and the content \times intonation interaction) were highly significant for each of the three questions ($ps < .001$). For the Indian groups, the content effects were equally highly significant, but the intonation effects were generally somewhat weaker and the interaction effects weaker still. The proportion of the

variance contributed by each of the three effects in each of these analyses was calculated by applying the formula for ω^2 (1, pp. 406-407). The values for each group and each effect are presented in Table 1.

TABLE 1
PROPORTION OF VARIANCE ACCOUNTED FOR BY CONTENT, INTONATION, AND THE
CONTENT \times INTONATION INTERACTION FOR EACH CULTURE
AND EACH SEX \times CULTURE SUBGROUP

Effects	Boys	Indians Girls	Total	Boys	Americans Girls	Total
Question 1						
Effects						
Content	.64	.72	.67	.78	.55	.66
Intonation	.06	.02	.03	.03	.11	.07
C \times I Interaction	.01	.00	.00	.05	.06	.05
Question 2						
Effects						
Content	.68	.67	.67	.70	.71	.70
Intonation	.03	.01	.02	.04	.07	.06
C \times I Interaction	.00	.01	.01	.05	.04	.05
Question 3						
Effects						
Content	.64	.61	.62	.39	.35	.37
Intonation	.05	.01	.03	.13	.22	.18
C \times I Interaction	.00	.02	.00	.07	.07	.07

Comparing the effects between cultures reveals a generally greater variance contribution for intonation and the content \times intonation interaction for the American adolescents, across the three questions. For question 1, the content effects are fairly similar between the two total culture groups, but there is an interesting sex reversal within the groups, with the Indian girls and the American boys showing the strongest content effect for question 1. There is a similar intonation effect crossover with each of the three questions; American girls show a greater intonation effect than American boys, while Indian boys show a greater effect than Indian girls.

The largest differences between cultures occur with question 3 ("Does the teacher like or dislike the child?"). Here, the content effect for the Indians is much greater than that for the Americans, while the Intonation effect and the interaction are substantially greater for the Americans than the Indians.

D. DISCUSSION

Although there was a slight age discrepancy between the two samples of girls, it seems quite unlikely that this accounted for or strongly influenced

the major findings. For one thing, the between-culture differences found for the Indian and American boys, who were of the same ages, were similar in most cases to those found between the two groups of girls. In addition, the differences between sex groups within culture were generally smaller than the differences between cultures. (The crossover effects found with question 1 are exceptions to this trend, but do not suggest any consistent age effects). Since the largest age differences were between the two sex groups within each culture, it is probable that age differences did not constitute an important factor in these results.

The major results are consistent with our initial expectation that second-language speakers would be similar to much younger native speakers in making less use of intonation in judging affective meaning, in being less likely to use different aspects of a message differentially to judge different aspects of meaning, and in being less skillful at integrating multiple communication channels, than more sophisticated native speakers. The results for the Indian sample in the present study are most similar to those obtained with 4th grade American children in our prior study, although even at this grade level the native speakers showed a more differentiated usage of content across the three questions (with ω^2 values of .73, .65, and .53); their intonation and interaction values did not show similar variation, however, and were quite similar to those shown by the Indian adolescents in the present investigation. (The 4th graders' ω^2 values for intonation in the three questions were, respectively, .01, .01, .01, and for the interaction, .03, .04, .04).

The sex-crossover effects obtained between cultures were unexpected but may be worthy of further exploration, particularly the finding with intonation, which occurred with each of the three questions. The finding that American adolescent girls were more responsive to intonation is not surprising, since it fits in with findings and discussions of Witkin (7), Maccoby (2) and others showing American girls to be more socially oriented and socially responsive than boys. The present findings suggest that this may not be a universal sex difference, that there may be aspects of Indian and perhaps other cultural experiences and expectations that produce entirely different patterns of social and personality characteristics associated with the sexes than are found in American culture.

We have presented the major results as showing a difference between native- and second-language speakers. It should be pointed out, however, that the study was conducted with only one language, and with second-language speakers of a particular culture. The degree to which the

findings may be unique to the language and cultures involved in this study is unknown. Confidence about the generality of the findings must await the results of similar studies done with other samples of languages and cultures.

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RELIGIOSITY AND AUTHORITARIANISM*

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ASHER SHAHAM

SUMMARY

We investigated (a) whether authoritarianism leads to religiosity or religiosity leads to authoritarianism, and (b) the relationship among Israelis between degree of religiosity and authoritarianism. The sample consisted of 176 Israeli high school and 125 college students. Four groups were isolated: religious sons of religious parents, religious sons of nonreligious parents, nonreligious sons of religious parents, nonreligious sons of nonreligious parents. The findings showed that the religious son of a religious family was more authoritarian than a nonreligious son of a religious family but not significantly more authoritarian than the religious son of a nonreligious family. These findings are interpreted as supporting the position that authoritarian individuals are attracted to an orthodox doctrine. The findings also disclosed for the Israel sample a high association between religiosity and authoritarianism.

A. INTRODUCTION

On the assumption that a strong relationship exists between religiosity and authoritarianism, how is this relationship to be explained? Does authoritarianism lead to religiosity, or does religiosity lead to authoritarianism? Frenkel-Brunswick (2), in her chapter on the Authoritarian Personality, claimed that religious orthodoxy was indeed related to authoritarianism, and that this relationship existed because of the conditioning of authoritarian individuals by orthodox doctrines—that is, first comes religious orthodoxy, and then authoritarianism.

The difficulty with this agreement, as noted by Photiadis and Johnson (9), is that logically authoritarianism precedes orthodoxy. Indeed, au-

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thoritarians would seem more likely to hold orthodox beliefs. In their study, they found that no relationship existed between church participation and authoritarianism. This led them to conclude that "the data more readily support the thesis that authoritarian individuals are more attracted by the orthodox doctrine than the thesis that orthodox believers become authoritarian through being conditioned by a doctrine which is authoritarian" (9, p. 247).

In order to examine further the direction of this relationship, we have made the following comparisons: group 1, son and parent religious; group 2, son religious, parent nonreligious; group 3, son nonreligious, parent religious; group 4, son and parent nonreligious.

If a religious son of religious parents (group 1) is more authoritarian than a nonreligious son of religious parents (group 3); and similarly, if a nonreligious son of nonreligious parents (group 4) is less authoritarian than a religious son of nonreligious parents (group 2), this would be presumptive evidence that it is the current religious status of the son and not his religious background which is the focal point of the relationship between religiosity and authoritarianism. However, should a religious son of religious parents (group 1) be more authoritarian than a religious son of nonreligious parents (group 2), and similarly, should a nonreligious son of nonreligious parents (group 4) be less authoritarian than a nonreligious son of religious parents (group 3), we could conclude that the family's religious background is the important link in the son's authoritarianism.

A somewhat relevant finding with regard to this problem is reported in the *Authoritarian Personality* (1, p. 215); "Where the mother is religious but the subject is not, or the subject is religious while the mother is not, the prejudice score is still lower and, as we should expect the lowest means appear when neither the subject nor the mother is religious." The assumption underlying this statement seems to be that the nonaccepting youth, by virtue of his independence or rebellion, would be less authoritarian than the religious conformist, since submission to, and dependence on, parental authority are regarded as important elements of the authoritarian personality. It would seem to us useful to distinguish between the two kinds of nonconformist: viz., those who turn *less* religious than their parents, and those who become *more* religious than their parents. We should expect the former to be less authoritarian, and the latter more authoritarian. The present research differs from the finding, just cited, in the *Authoritarian Personality*, for it is concerned with the differences in authoritarianism between two people who possess a similar degree of religiosity, but are of

different religious backgrounds; whereas the discussion in the *Authoritarian Personality* is concerned with the situation where both mother and son have the same degree of religious commitment as compared with the situation where they do not.

The present study was conducted in Israel, where a change in one's degree of religiosity requires marked behavioral changes. One of the social facts of Israeli society is that a central distinction (if not the central one) is between the religious and the nonreligious. The State, for example, maintains two independent school systems—one which is religious, and another which is nonreligious. Conservative Judaism and Reform Judaism essentially do not exist, so that "religious" becomes equivalent to "orthodoxy." A person who becomes religious (read "orthodox") will inevitably have to display his decision by, for example, covering his head with a *yarmulka*. Similarly, a person who stops being religious would remove the *yarmulka*.

In addition to explaining the nexus between religiosity and authoritarianism, this study is also concerned with examining the relationship between the degree of religiosity among Jews in Israel and authoritarianism. Concerning the relationship in general between religiosity and authoritarianism, it is to be noted that in contrast to the many researches on authoritarianism and political ideology, the religiosity-authoritarianism nexus has been relatively little studied. Yet, as Kirscht and Dillehay (5) have observed in their review of studies on the *Authoritarian Personality*, from the theoretical aspect there is no reason to think that the relationship between authoritarianism and political ideology differs in essence from the relationship between authoritarianism and religiosity. The studies, discussed below, that have explored this relationship found correlations ranging from .06 to .65. None used a Jewish sample.

Gregory (3) obtained a correlation of .53 between the F scales and a scale measuring religious beliefs. His sample consisted of 596 university students and church groups (mostly fundamentalists). Levinson (7), on a sample of 28 participants in a workshop in intergroup relations at Harvard University, reported a correlation of .35 between the F scale and a scale measuring religious conventionalism. Photiadis and Biggar (8), on the basis of a sample of 300 men and women from three Protestant churches, obtained a correlation of .29 between authoritarianism and religious orthodoxy (six item scale), a correlation of .06 between authoritarianism and church participation, and a correlation of .36 between authoritarianism and extrinsic-intrinsic beliefs. Jones (4), using two samples of naval cadets, found authoritarians to differ from nonauthoritarians in church affiliation

and church attendance, but not in their religious backgrounds. Outside the United States, in the Netherlands, Weima (10) obtained correlations in the sixties between the F scale and a Religious-Conservatism scale. His groups consisted of male members of Ecclesia Circles and of Catholic students.

There are more religious requirements for the orthodox Jew than for the orthodox Christian. That is, religion is a more encompassing way of life for the orthodox Jew than it is for the religiously committed Christian. It would be plausible then to expect that the relationship between religiosity and authoritarianism would be stronger in the Jewish population than in the non-Jewish population.

B. METHOD

1. *Sample*

Two independent samples were drawn in Israel. The first consisted of junior and senior high-school students in a religious high-school ($N = 81$) and in a nonreligious school ($N = 95$), making a total of 176 subjects. The second sample consisted of 125 students from a university where the majority of students were religious. In the latter sample, the age ranged from 19-26. The reason for the relative spread in the age is that many of the students had been in military service. The first hypothesis was examined only on the college sample, for only there were questions on the parents' religiosity included.

2. *Measures*

In both samples a "Balanced F Scale" was translated into Hebrew and several modifications were made to fit it to Israeli society. This "Balanced" scale by Lee and Warr (6), in the opinion of the present authors, represents one of the better revisions of the F scale and meets many of the objections raised in connection with it. Three items related to religiosity on the F scale were omitted, so as not to yield a spuriously high correlation between religiosity and authoritarianism. The subjects were asked to respond to each item on a six point continuum, ranging from "very much agree" to "very much disagree."

A number of items were asked on religious observance (e.g., travelling on Saturdays, eating on various fast days, keeping "kosher" in and out of the home). The subjects also indicated whether they considered themselves religious, traditional, or nonreligious. These three designations (religious, traditional, and nonreligious) are "real" social definitions in Israeli society. "Traditional" (not to be confused with orthodox) is the most heterogeneous

category, including individuals whose Sabbath observance may be limited to the lighting of candles, as well as those who may not travel on Saturdays, but who do switch on lights.

C. RESULTS

The findings with regard to the relationship between religiosity and authoritarianism revealed highly significant differences for both the high-school and college samples. The religious were the most authoritarian, the nonreligious least authoritarian, and the traditional, in-between.

The relationship between the congruence of the degree of religiosity between the son and the parent and authoritarianism is examined by two sets of comparisons: (1a) religious sons, whose fathers were religious *vs.* nonreligious sons, whose fathers were religious (groups 1 and 3); (1b) religious sons, whose fathers were not religious *vs.* nonreligious sons, whose fathers were not religious (groups 2 and 4); (2a) religious sons, whose fathers were religious *vs.* religious sons, whose fathers were not religious (groups 1 and 2); (2b) nonreligious sons, whose fathers were religious *vs.* nonreligious sons, whose fathers were not religious (groups 3 and 4). Unfortunately, the religious son and nonreligious father combination yielded only eight cases (group 2), making comparisons with this group less reliable.

The results, as shown in Table 1, are clear: the first set of comparisons is significant, the second set is not. When the degree of religiosity of the parent is held constant, the son's religiosity determined the degree of authoritarianism. Religious sons of religious parents (group 1) were significantly more authoritarian than the nonreligious sons of religious parents (group 3); similarly, religious sons of nonreligious parents (group 2) were significantly more authoritarian than the nonreligious sons of nonreligious parents (group 4). The second set of comparisons, which yielded

TABLE 1
MEAN F SCORE OF SONS WHO ARE AS RELIGIOUS AS, OR LESS RELIGIOUS THAN, THEIR FATHERS

Group	Religiosity of son	Religiosity of father	(N)	\bar{X}	Comparisons	<i>t</i>
1	Religious	Religious	(65)	6.63	1 <i>vs.</i> 3	3.22*
2	Religious	Nonreligious	(8)	3.88	2 <i>vs.</i> 4	2.74**
3	Nonreligious	Religious	(24)	-3.03	1 <i>vs.</i> 2	.91
4	Nonreligious	Nonreligious	(28)	-6.46	3 <i>vs.</i> 4	.88

* $p < .01$.

** $p = .01$.

nonsignificant differences, compared the religious sons of religious parents (group 1) with the religious sons of nonreligious parents (group 2), and nonreligious sons of religious parents (group 3) with nonreligious sons of nonreligious parents (group 4). We may then conclude that it was not the religious background of the family that was the link in authoritarianism, but rather the degree of religiosity of the son.

D. DISCUSSION

The association between religiosity and authoritarianism has been substantiated at an extremely high level of significance. The basic question is: *why* the relationship? Most of the studies that have dealt with this topic have not raised this question. It may be that the genesis of this relationship is, at least in part, different for the Jewish population than for the non-Jewish population.

Three reasons suggest themselves; the first two would be relevant to Jewish and non-Jewish populations. Orthodox children may be brought up more strictly than nonorthodox children. In accordance with the approach of *The Authoritarian Personality*, they would be expected to be more submissive to, and dependent upon parental authority. This position sees authoritarianism as developing out of differing socialization practices. While this may or may not be so, there is no evidence at present either to support or disprove this contention. A second possibility is that orthodox individuals are in general more submissive than nonorthodox individuals. Here submissiveness is seen as reflecting a cultural value, and not a direct result of socialization practices.

A third possibility (particularly for the Jewish population) is that the observed relationship is, to an extent, spurious, since the values of the authoritarian and of the religious individual—for *completely different etiological reasons*—are similar. Both would respond similarly to the item on the F scale dealing with modest sexual behavior—the authoritarian because of his own psychological needs, the orthodox person because he values modesty (in certain segments of the orthodox community, the women always wear long sleeves and long skirts, before the current ladies' fashion became the vogue, and cover their hair either with a wig or a kerchief). In the area called "superstition" (one of the nine characteristics of the F scale) we can envisage the orthodox agreeing with the statement, "Science has its place, but there are many more important things that can never possibly be understood by the human mind" (although not with the

item, "some day it will probably be shown that astrology can explain a lot of things"). It would seem that the values of the orthodox Jew are of a conservative nature, not because of a personality trait, but because of his acceptance of Jewish Religious Law, which is by nature conservative and not amenable to change.

The findings showed that the religious son of a religious family was more authoritarian than a nonreligious son of a religious family, but not significantly more authoritarian than the religious son of nonreligious parents. Conversely, the nonreligious son of nonreligious parents was less authoritarian than the religious son of nonreligious parents, but not significantly less authoritarian than the nonreligious son of religious parents. Since the religious son of religious parents displayed the same amount of authoritarianism as the religious son of nonreligious parents (and similarly for the nonreligious son), we may infer that the religious family background of the subject was not the critical factor predisposing him to authoritarianism. And since the religious son was more authoritarian than the nonreligious son—when both came from the same religious background—we may infer that it was the current religious state, and not the religious background, that was the link in authoritarianism. These data would seem more readily to support the position that authoritarian individuals are more attracted to orthodox doctrine than Frenkel-Brunswick's (2) thesis that orthodox believers become authoritarian through being conditioned by a doctrine which is authoritarian. In other words these results, from a different perspective, support the conclusion arrived at by Photiadis and Johnson.

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TORTURE AND EXECUTION OF SURROGATE KINSMEN IN TWO SOCIETIES: THE AINU AND THE TUPINAMBA*

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SUMMARY

This paper examines some striking parallels between rituals of two geographically distinct aboriginal groups, the Ainu of northern Japan and the Tupinamba of Brazil. In each case an outsider—a bear for the Ainu and a captive in warfare for the Tupinamba—is “adopted” into the group for a time, treated as a kinsman, and then eventually tortured and killed. It is suggested that these similar rituals may have provided effective mechanisms for the refocusing of ingroup aggression upon nonmembers, and hence acted as safeguards against disruptive activity within the group.

A. INTRODUCTION

The aim of this paper is quite modest. The author is a social anthropologist whose theoretical stance inclines toward cultural ecology—the analysis of the interrelationships among environment, subsistence patterns, social organization, and other aspects of culture. He has no training or background in psychology. The data presented here appear to defy analysis in other than psychological terms, and the purpose of the paper is to bring this material to the attention of a psychologically sophisticated audience. The approach is almost entirely descriptive; interpretation is left to the reader, who, it is hoped, will prove better equipped for the task than the author. Information is presented on similar rituals among two aboriginal peoples who are widely separated both historically and geographically—the Ainu of northern Japan and the Tupinamba Indians of eastern Brazil. The only hypothesis to be tentatively offered is that the apparent resemblances between these two ritual complexes may stem from comparable psychological processes.

* Received in the Editorial Office, Provincetown, Massachusetts, on February 11, 1974, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1975, by The Journal Press.

B. THE AINU CASE

The Ainu are the aboriginal inhabitants of Japan. Their geographical range today is limited to the northern island of Hokkaido, but in earlier times they may have extended as far south and west as the Kansai area near the modern cities of Osaka and Kyoto on the main island of Honshu. (11). The history of Japan displays some parallels with that of North America, in that there was a gradually advancing frontier of settlement, with the Japanese the pioneers and the Ainu in the role played by American Indians in the United States and Canada.

The problem of the racial and linguistic affinities of the Ainu remains one of the major unanswered riddles of anthropology. On the basis of their dolichocephaly, blood typing, and hirsuteness they are usually classified as either Caucasoid or Australoid rather than Mongoloid (2, 4). Their language has never been convincingly placed in any larger linguistic family.

The contemporary Ainu are, of course, much acculturated to the dominant Japanese society; indeed, for the last hundred years or so virtually everyone who has written on them has predicted their imminent extinction. Ironically, however, each of these prophets of doom has provided a slightly larger estimate of Ainu population size than his immediate predecessor—12,281 in 1873 (3), about 16,000 in 1923 (8), and approximately 20,000 in 1954 (6). It is apparently true that the Ainu language is indeed almost dead, that the majority of those who today classify themselves or who are classified by others as Ainu carry some admixture of Japanese genes, and that "traditional" Ainu culture has all but disappeared, but the population statistics cited above belie the pessimistic statements in the literature concerning Ainu survival.

The Ainu were aboriginally hunters and gatherers; agriculture was introduced by the Japanese in 1833 (15). Their environment was a rich one. Deer and bear were hunted with bows and arrows, a fairly wide variety of edible plants were collected by the women, and annual runs of salmon from October through December were preserved by drying and smoking and provided a reliable year-round food supply. Indeed, the salmon run was important to the Ainu as it was to the Indians of the Northwest Coast of North America; in each case, salmon constituted a staple source of food surplus which made possible sedentary, permanent villages, an unusual pattern in hunting and gathering societies.

Ainu religion was highly animistic. All animals, plants, and distinctive topographic features were seen as the abodes of deities (*kamui*), which were intimately involved in the everyday life of the Ainu. The *kamui* were

propitiated and their aid solicited before embarking on any major task, and they were especially important in ensuring a successful hunt. The particular ritual with which we shall be specifically concerned here—the *iomande*, or bear festival—may have been originally a highly elaborated version of these hunting rites. Bear ceremonialism is an extremely widespread phenomenon in the Northern Hemisphere, extending from Lapland to northeastern Canada, and may be associated with an ancient Boreal culture of Old World origin (5), but the Ainu *iomande* contained many features which were unique.

As mentioned above, the *kamui*, according to Ainu belief, visited the world of the Ainu in plant and animal form, and they were particularly fond of the guise of bears. The skin and carcass of the bear formed the *hayokube*, or disguise, of the god. In preparation for the bear ceremony, the Ainu captured a very young bear alive. It was brought back to the village and raised to maturity with tender care; it was treated, in fact, much like a member of the family, even to the extent of being addressed by kin terms and occasionally suckled by Ainu women. The ceremony was held in the wintertime when there was an abundance of food, for it entailed much feasting. The bear was led from its cage and tethered to a post in an open area. It was then driven around in circles and blunt arrows shot at it until both it and the Ainu had been worked into a frenzy. The archery was performed by males; the attitude of the women is described by one source as dolorous weeping (9), and by another as dancing jubilation (7). Finally the *coup de grace* was delivered; in some areas, the bear was dispatched by shooting it with a sharp-pointed arrow, a relatively humanitarian method, but in others its skull was slowly crushed between two pieces of wood or it was throttled to death in the same manner. It was immediately butchered, and certain choice morsels (e.g., the heart, the liver, the fatty portion of the eyeball) were eaten raw on the spot, by both men and women; the rest of the meat was cooked and a great feast ensued.

The Ainu explained the significance of the ceremony in the following way: "The gods who come to this world can return happily to the kingdom of the gods only by being free of their *hayokube* at the hands of the Ainu people" (9). In other words, the Ainu killed the bear for the bear's own good. Yet when a bear was killed during the course of the hunt, a frequent occurrence, there were no such ceremonial overtones. The Ainu merely begged the bear's forgiveness for having killed it. Furthermore, if the purpose of the ritual was to free the god of its disguise, why was it necessary to kill the bear in such a cruel manner?

C. THE TUPINAMBA CASE

The name *Tupinamba* is applied to a number of politically distinct Indian groups who in the 16th Century occupied the Brazilian coast from the mouth of the Amazon River to the southern part of the modern state of Sao Paulo (10). Archaeological and linguistic evidence indicates that they underwent a considerable population expansion and geographical radiation shortly before European contact, perhaps partially as a result of transition from hunting and gathering to horticulture, and displaced a more primitive population of Ge speakers. Their migrations were spurred by a messianic myth depicting a "land of immortality" where the culture hero had retired after his early adventures.

The Tupinamba exploited riverine and marine sources, particularly shellfish, but horticulture was their primary subsistence mode. The staple crop was bitter manioc (*Manihot esculenta*), although maize, peanuts, sweet potatoes, beans, and pumpkins were also grown.

The characteristic of Tupinamba culture which most impressed Europeans at the time of contact and with which we shall be concerned here was their extreme bellicosity. Internecine warfare was a constant phenomenon and contributed greatly to their relatively easy conquest by Europeans. The chief aim of this warfare was the taking of prisoners, who were ultimately to be the victims of cannibalistic feasts. Unlike most aboriginal cannibals, who usually consumed only small, ritually significant portions of the human body for supernatural reasons, the Tupinamba were apparently enthusiastic epicures of human flesh. Following a battle, the victorious party would pause on the field to consume the corpses of the slain, preserving only the heads and sexual organs as trophies. They then returned to their home village, taking with them the captives who had been their primary objective. On the way home, the prisoners were exhibited in friendly villages, where they were the object of ridicule and vituperation.

The status of captive in Tupinamba society was ambiguous. During the procession back to his captor's community, the prisoner was supposed to pretend extreme contempt for his enemies. He was not killed immediately upon arrival, but instead was sometimes kept alive for a period of years. During this time, the only symbol of his captivity was a rope worn around his neck. Apart from this, he was not ill-treated in any way; indeed, he was frequently allowed to marry a woman of the village and produce children. Nevertheless, his ultimate fate, of which he was well aware, was to be killed and eaten. In fact, the parts of his body were often allotted in

advance to various members of the village during drinking bouts in which the captive himself was a participant. In spite of this, no attempt was apparently ever made to escape. The prisoner's position in his own community was so debased by his capture that he would have been killed had he attempted to return.

On the eve of his execution, the captive was often requested to dance. "He did so without reluctance and took part in the general rejoicing as if he were merely a guest. He even regarded his position as enviable, for 'it was an honor to die as a great warrior during dancing and drinking' " (10, p. 122).

The execution itself was preceded by a period during which the victim was tied in the plaza of the village, exchanging taunts and insults with his captors, especially the women of the community. The execution was performed with a club. The captive was allowed enough liberty to dodge the executioner's blows for a while, but eventually succumbed, his skull shattered, to the cheers of the onlookers. His wife, if he had one, shed a few tears over the body before joining the feast.

Lest the author be accused of sensationalism, he will quote directly from Metraux's description of the ensuing banquet:

Old women rushed to drink the warm blood, and children were invited to dip their hands in it. Mothers would smear their nipples with blood so that even babies could have a taste of it. The body, cut into quarters, was roasted on a barbecue, and the old women, who were the most eager for human flesh, licked the grease running along the sticks. Some portions, reputed to be delicacies or sacred, such as the fingers or the grease around the liver or heart, were allotted to distinguished guests (10, p. 124).

D. DISCUSSION

It seems self-evident that a primary function of both rituals is to provide a socially acceptable outlet for extremely aggressive impulses. It is significant that the victim of this aggression, while objectively an outsider, is to some extent adopted into the community and treated as a kinsman—a "child" in the case of the Ainu *iomande*, and a "husband" in the Tupinamba instance. Neither Ainu nor Tupinamba culture would seem to be lacking in other means for expressing aggression in a socially approved if somewhat less dramatic manner.

According to one author, the Ainu were in general nonaggressive: "aggression was not prominent in Ainu behavior, though in hunting the men were not merely brave but reckless. . . In general there was more anxiety than direct aggressiveness in the Ainu personality" (13, p. 211). In fact,

however, there were a number of channels for the expression of aggression among the Ainu in addition to the hunt and bear festival. One of these was a ritual called the *charanke* which bore a close resemblance to the well-known Eskimo insult contest; the adversaries would harangue each other before an appreciative audience until one or the other conceded defeat (14, p. 20). A more violent alternative to the *charanke* was *uraku*, a duel with clubs. "This was used when one so resented another as to desire to take his life. An arbitrator would witness and, by agreement, each would beat the others, in order to dispel the resentment" (14, pp. 21-22). One might suspect that this procedure would heighten rather than dispel resentment, but Takakura assures us that the participants almost always parted amicably. It is not surprising, with these outlets for aggression available, that in a lengthy discussion of crime and punishment among the Ainu, Takakura does not even mention murder or other crimes of violence. The most serious transgression discussed is adultery.

The Tupinamba case would seem to be even more clear-cut. The endemic warfare, and the Tupinamba's obsession with it, is quite clearly an effective mechanism for the displacement of aggressive impulses. The problem which does arise, however, in both cases, is the necessity for explaining why, with relatively extensive outlets for the expression of aggression already available, these two societies independently developed the rather gruesome rituals which have been described in this paper.

In a discussion of the Tupinamba, Steward and Faron (12) make the following observations;

It is perhaps a significant corollary of the violent and excessive behavior entailed in these war activities that the Tupinamba placed great value upon smoothness of manners and cooperation between members of the community. It is said that quarrels were avoided so carefully that any serious misunderstanding might lead a person to run amok, destroy property, and perhaps even burn down his own house and that anger often led to suicide by eating earth. Possibly there is a nexus between the behavior toward fellow villagers and that toward members of other communities in that warfare provided an outlet for hostilities which accumulated within the village but were so severely suppressed that any lapse led to the destruction of one's property and even the taking of one's own life (12, pp. 327-329).

This is plausible as far as it goes, but it does not come to grips with the crucial fact that the primary victim of outgroup aggression in the Tupinamba case is first virtually adopted *into* the group, as is the bear cub among the Ainu. It would seem that a satisfactory analysis of the two cases must explain this above all else.

The fact that in the Ainu case the object of aggression is not only a fictitious kinsman but even a fictitious human being may reflect a more effective set of mechanisms for dispelling aggression in less violent ways—the other rituals described above. If Steward and Faron's description of the great emphasis placed by the Tupinamba upon "smoothness of manners and cooperation" within the community is accurate, then it is unlikely that they could have tolerated such a display of overt hostility as the Ainu *uraku*. In any event, the bear is an animal which, because of its ability for semiupright locomotion, omnivorous diet, and relatively high intelligence, is easy to anthropomorphize.

It is perhaps also significant that in both cases the closest relationships with the ultimate ritual victim are formed by women. It is they who sometimes suckle the Ainu bear cub, who care for it and fondle it, and they who marry and bear children by the Tupinamba prisoner. It is also women who are effectively cut off, in both societies, from other means of expressing aggression. The insult contest and club fight among the Ainu are exclusively male phenomena, as is Tupinamba warfare. It is therefore not surprising that women were apparently the most enthusiastic participants in the harassment of the Tupinamba captive and the subsequent feast. Our authorities differ on their behavior during the execution of the bear among the Ainu, but one is tempted to place greatest credence in the account which depicts them as enthusiastically jubilant.

Some years ago, Aberle and his colleagues suggested that one of "the functional prerequisites of a society" was "the effective control of disruptive forms of behavior" (1, p. 110). The frictions of day-to-day domestic life in any society must inevitably generate feelings of hostility, resentment, and intrafamilial aggression. If these feelings are allowed full reign, then the resulting behavior is disruptive to the survival of the family unit, and ultimately, if the phenomenon becomes widespread, to the society as a whole. The apparently bizarre institutions of the Ainu and the Tupinamba which have been discussed in this paper may in fact represent quite functional means for displacing this potentially disruptive aggression on to outsiders who become temporary members of the group only long enough to serve as objects for its ingroup hostility.

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FAMILIARITY, ATTRACTION, AND CHARITY*

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SUMMARY

It was hypothesized that an increase in familiarity with a supplicant would increase help-giving. The hypothesis was tested in the field. Familiarity with a stranger was increased by having him stage a brief conversation with a friend in front of the subject. Subjects were people found sitting alone in places such as libraries, etc., on a college campus. Half the subjects overheard the experimenter portray a pleasant person; the other half overheard him portray an unpleasant (but not fearsome) person. Comparison with control data indicates that familiarity with the stranger increased generosity regardless of the subject's evaluation of the supplicant. This result is interpreted as stemming from a reduced tendency to freeze and reject a stranger in need of help when the stranger is slightly familiar. The lack of effect of perceived supplicant pleasantness is also discussed.

A. INTRODUCTION

At 3:00 a.m. one morning several years ago, in the Kew Gardens area of New York, 38 people heard a young woman named Kitty Genovese screaming for help, but not one person even telephoned the police. The Kitty Genovese situation has been recreated in the laboratory with similar results (6). For example, only eight out of 40 subjects (in separate two-person groups) responded with help when a woman in an adjoining room was heard to fall and apparently hurt herself. From the outsider's vantage point, offering help wouldn't seem to have been very costly to these subjects; the situation does not appear dangerous, and help could have consisted of simply calling for someone else to assist the victim. Furthermore, Latané and Darley report that noninterveners claim they would be among the first to help in a "real" emergency.

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Why do not people behave altruistically when to do so is not costly and they believe they should do so in the abstract? Latané and Rodin (7) report results which are suggestive of one factor (among many) which may dampen help-giving in most situations. They found that subjects were more likely to help when they were with friends or if they had briefly met the victim before the emergency. Also, Darley and Latané (2) found that people in a familiar situation (city people in a subway) were more likely to help than people in a relatively unfamiliar situation (travelers in an airport). These results suggest that an increase in familiarity with either the situation or the victim will increase help-giving, at least when there is no increase in apparent danger. Perhaps one reason people seem so callous is that they tend to freeze momentarily when something unexpected happens. To hesitate in effect, if not in intent, is often to fail to be helpful. Either through the contagion of apparent unconcern on the part of similarly hesitating bystanders or simply because it sometimes becomes harder to initiate action as time passes, once people hesitate, they tend to persevere in hesitation. A small increase in familiarity with the situation or the victim might reduce this tendency to freeze and thus increase the likelihood that the help that people would deem proper in the abstract actually is offered.

One method, then, of increasing helpfulness would be to give a potential helper some information about a future supplicant. This was accomplished in the present study by staging a conversation between the supplicant and another stranger in front of the potential helper. Increasing familiarity has been argued to result in increased attraction (12). That increased attraction might lead to increased helpfulness toward the supplicant would not be surprising—although, in fact, there are a number of studies which show that helping and liking are not always related (3, 4, 9, 10, 11). However, the familiarity hypothesis posed above requires that an alternative explanation in terms of increased attraction be ruled out. Therefore both pleasant and unpleasant conversations were staged. Whether the supplicant portrayed a pleasant or an unpleasant person, familiarity was predicted to increase helpfulness through reducing the tendency to freeze.

All of the studies cited above which show that helping and liking for the person needing help are not always related involved a situation which is much more complicated than that involved in the present study. Here, the subject was not the object of any of the supplicant's pleasant or unpleasant verbal behavior and could anticipate no other interaction with him after deciding to help or not to help. It seemed reasonable to expect, then, that the pleasant-seeming supplicant would receive help more often than the

unpleasant-seeming supplicant—but, to reiterate the main hypothesis, even the unpleasant-seeming supplicant was predicted to received more help than the supplicant in the control condition.

B. METHOD

The same initial procedure was followed by four pairs of student-experimenters. Two pairs consisted of males, one of females, and one was mixed. One student in each pair was always the listener and the other was always the talker (who will be referred to as *T*). In the mixed pair, the male was the supplicant. Each pair searched around the campus, usually in the library, looking for someone sitting alone. Both men and women subjects were sought. A randomized order of conditions was given to each pair. This order was modified by the experimenters only as much as necessary to keep roughly the same proportion of each sex in each condition. Once the pair found a potential subject, they determined from their form what condition he was to be in, and then appeared to meet unexpectedly in front of him. *T* talked with the other member of the pair, the listener, first about a class they were both taking and a related paper he was working on. The listener asked *T* about an ex-girl friend; *T* responded with some remarks about her and about a new girl friend. The listener made only brief but pleasant responses to all this and then said he had to hurry off to meet someone at another location. Each then went separate ways. The scene lasted only about a minute.

In the Pleasant Conversation condition, *T* tried to portray a good-tempered, ordinary sort of person. His evaluative comments about the class, its teacher and the two girls were all reasonably favorable. In the *Unpleasant Conversation* condition, *T* tried to portray a complaining, sour-tempered sort of person. All evaluative comments were negative and included some profanity. A third *No Conversation* control condition was included in which the subject had neither seen or heard either member of the pair before *T* approached the subject for help.

In the second phase of the experiment, *T* became the supplicant. He walked up to where the subject sat, looked worried and asked him if he had seen a wallet around. The subject typically said he had not, and often helped *T* look for it. Then *T*, remarking that he must have left it on the bus (and so couldn't find it until the end of the day), said he had not had some appropriate meal (breakfast or lunch) and had to work in the library all day. (This latter "fact" had also been brought out in the overheard conversation with the listener.) He then asked the subject to lend him a quarter.

If the subject offered *T* any money, it was explained to him that this was a study of people's willingness to help a stranger and the money was not accepted. If the subject did not offer money, no attempt was made by *T* to explain the study. After leaving the subject, *T* made ratings of several characteristics of the interaction: how pleasant the subject was, whether he offered an excuse, and if so, whether the excuse was believably valid.

With the fourth pair of experimenters, a third phase was added to the procedure. Following *T*'s request for money and after *T* left, the listener in the overheard conversation reappeared in front of the subject, explained that they were doing a study of reactions to a stranger and the overheard conversation and/or request for money had been staged. He then asked the subject to rate *T* on 10 seven-step adjective rating scales. Subjects were told to be frank, that they were to judge what kind of person *T* *seemed* to be, not what kind of person he *really* was. Only one subject ever claimed not to have heard the conversation. No one refused to make the ratings and only one subject (not dropped) marked the neutral point on all scales. This finding suggests that most subjects felt they could make meaningful ratings of *T*. With the fourth pair of experimenters two *No Request* control conditions were also added to the experimental design: In these conditions subjects heard a pleasant or unpleasant conversation but were not asked for money. These control conditions were included to assess the impact of the staged scene on the subject's perception of *T* before this perception was further changed by his reaction to *T*'s request for money.

None of the experimenters was told what the specific hypothesis of the study was. Apparently they expected the Pleasant Conversation to raise the donation rate, but contrary to the author's hypothesis, they expected the Unpleasant Conversation to yield a lower donation rate than the No Conversation control. Two pairs reported that the experiment was a "failure" because too many people gave *T* money, particularly in the Unpleasant Conversation condition. Thus experimenter bias, if a problem here, would work against the familiarity hypothesis as tested by the donation rate data. We might add here that the first three pairs of experimenters were initially regarded as conducting a pretest. The first two pairs were so convinced of the failure of the experiment that they quit after collecting data on only a few subjects in each condition. They were refused money only by subjects in the control condition. The third pair of experimenters persevered somewhat longer, although they too reported the experiment to be a failure, having been turned down by only a few subjects in the experimental conditions. Since no detail (aside from the addition of ratings)

was changed from one pair to another, the pretest data were included in the analysis reported. Each pair contributed equally to the three conditions.

For convenience in the pretest pairs, the listener-talker roles were not rotated. For the fourth pair the roles were not rotated, since one experimenter had served in a previous panhandling study by the present author and found that no one ever refused him money. The explanation seemed to lie in his appearance: He was tall with medium long red hair, and was generally a very attractive young man. It would be preferable, of course, to have rotated roles in all pairs, and in retrospect the caution exercised in not using the redhead as supplicant seems unnecessary, since the same pattern of results can be seen for all four experimenters who contributed to the donation rate data. However, given the latter finding, the results can be said to be stable across various experimenter personalities.

C. RESULTS

1. *Effectiveness of the Manipulation of T's Pleasantness*

The ratings of *T* gathered by the fourth pair of experimenters indicate that the staged conversations had the intended effect (Table 1). In the analysis of these rating data, donors and nondonors were treated as separate groups because their donation decision was expected to have an effect on their perception of *T*. With the addition of the No-Request-For-Money group, there were three types of subject within three experimental conditions. There is no No-Request-No-Conversation cell in the resultant 3×3 design, since it is difficult, of course, to ask people to rate someone they have never seen. For this reason, the eight groups were treated as eight levels of one variable in calculation of the error term. Sex of subject was treated as an orthogonal variable to the latter. The prediction was that the supplicant in the Unpleasant Conversation condition would be seen as less likable than the supplicant in either the Pleasant Conversation or the No Conversation condition. No significant difference was predicted for the latter two conditions on the assumption that people tend to have an initially moderately positive attitude toward strangers. Each rating scale was analyzed separately.

As Table 1 shows, and as expected, in the Unpleasant Conversation condition *T* was rated by donors, nondonors, and No-Request-For-Money subjects as less pleasant and less likable than in either the Pleasant Conversation condition or the No Conversation condition. Comparison of the Unpleasant Conversation condition with the Pleasant Conversation condi-

TABLE 1
RATINGS OF SUPPLICANT'S PLEASANTNESS AND LIKABLENESS^a

Type of S	Conversation		No Conversation	
	Pleasant Mean	<i>n</i>	Unpleasant Mean	<i>n</i>
Donor	5.2	7	2.6	8
Nondonor	5.2	4	3.0	4
No request for money	5.1	11	3.6	13
				—

^a Cell entries are the average mean ratings for pleasant-unpleasant and likable-unlikable, and the *n* per cell. The two scales were analyzed separately. Since the patterns of means for the scales are almost identical, average cell means are presented here. The scales had seven steps; a high score indicates positive evaluation.

TABLE 2
PROPORTIONS OF DONORS AND EXCUSES GIVEN

Condition	Donors		Nondonors Giving excuses	
	%	(<i>n</i>)	%	(<i>n</i>)
Conversation				
Pleasant	66	29	100	10
Unpleasant	65	31	91	11
No Conversation	44	32	56	18

tion shows that scale ratings for *pleasant-unpleasant* differ significantly at the .001 level ($F = 59.44$) and for *likable-unlikable* at the .05 level ($F = 4.66$).

Comparison of the Unpleasant Conversation condition with the No Conversation condition, with respect only to subjects asked for money and with the use of the Neuman-Keuls procedure, shows that the *pleasant* scale ratings differ significantly at the .01 level and the *likable* scale ratings at the .05 level. (No significant differences appeared for one other evaluative rating, *valuable-worthless*.)

Only sex differences appeared for data on *honest-dishonest*, with all subjects tending to rate *T* as honest, but men giving less extreme ratings than women ($F = 5.32$, $p = .06$). The main finding of no differences in perceived honesty indicates that *T*'s rationale for his request was probably equally believable in all conversations.

Also as expected, no significant differences were found among the *dangerous-harmless* scale data. In all conditions the mean rating is on the harmless side of the scale. Observed differences show that the No Conversation subjects tended to mark the scale at the neutral point, while Conver-

sation subjects were likely to see *T* as "harmless." Thus, an explanation of condition differences in donation rate in terms of fearsomeness-of-*T* can be rejected.

Among subjects who were asked for a quarter by *T*, those in the Unpleasant Conversation condition rated *T* as significantly more *unusual* than did *Ss* in other conditions ($p < .05$ by the Neuman-Keuls comparison procedure). The unusualness rating does not appear to be related to the *familiarity* rating, since no differences were found for the latter. Ratings of *T*'s familiarity did tend to be lower in the No Conversation condition, but observed differences were far from significant. Possibly some subjects were rating the familiarity of the type of person *T* portrayed rather than familiarity through observation.²

Although splitting the sample by sex resulted in cells with a very small n , analysis of differences between women and men yielded some significant results. There is a significant sex by type-of-subject interaction in ratings of pleasant and likable.³ Nondonor ($n = 8$) women tended to rate *T* as more pleasant and likable than women who gave money and women not asked for money. A reversal of these results is seen in ratings by men who overheard a conversation: Nondonor men ($n = 7$) tended to rate *T* as less pleasant and likable than men who gave money and men not asked for money. These sex differences can be interpreted, possibly, as reflecting the usual female-male differences. For example, perhaps nondonor women tended to give *T* higher ratings than donor women because women, who are supposed to be nurturant, will feel guilty for not giving or will feel reactance after having given. The ratings given *T* by the men, in contrast, might reflect *T*'s attractiveness which was a partial determinant of helpfulness on the part of the men. Whatever the interpretation, the important finding here, in light of the initial hypothesis, is that sex did not interact with the experimental variable.

In summary, the ratings indicate that the manipulation of the apparent pleasantness of *T* had the intended effect. Since the ratings were collected by one experimenter, and since this experimenter was aware of what condition the subject was in, the opportunity for experimenter bias to influence the ratings was present (even though the subject filled out the rating sheets himself). Since the experimenter expected the Unpleasant

² Other scales yielding no significant results are *strong-weak*, *interesting-uninteresting*, and *colorful-colorless*.

³ The interaction term for type of subject (Donor, Nondonor, No Request) by sex of subject is significant at the .01 level for the *pleasant* scale ($F = 5.18$) and at the .05 level for the *likable* scale ($F = 3.75$).

Conversation to lower donation rates, it would seem plausible to expect bias to appear in the form of not only ratings of *T* as being less pleasant, but also as being less honest and dangerous in the Unpleasant Conversation condition. The fact that the differences that appeared were very small and far from significant for *honest* and *dangerous* indicates that experimenter bias probably had little influence on the ratings.

2. Donation Rates

The effect of the conversations was assessed by combining the two conversation groups and comparing them with the No Conversation control. The design of this chi square analysis was determined by the familiarity hypothesis; e.g., both conversation conditions were predicted to raise the donation rate above the control level. The second step in the analysis was to compare the two conversation conditions. [The rationale and procedure for partitioning of chi square into single degrees of freedom on the basis of *a priori* hypotheses can be found in Bresnahan and Shapiro (1).]⁴

As Table 2 shows, the staged conversations had the predicted effect of raising donation rates above the control level ($\chi^2 = 3.86$, $p = .05$). Contrary to expectation, there was almost no difference between the two conversation conditions.

Among nondonors a further significant Conversation effect appears. As Table 2 shows, almost all nondonors in the Conversation conditions gave *T* excuses for turning him down, while only about half the subjects in the No Conversation condition did. This difference is significant at the .01 level ($\chi^2 = 8.61$). Presumably, then, the felt necessity to give an excuse was also affected by familiarity with the supplicant.

Sex differences within conditions were examined also. There was a slight tendency for men to give more than women in the two Conversation conditions, but this trend was not significant.

D. DISCUSSION

The hypothesis that a small increase in familiarity will lead to increased positive action towards an unfamiliar supplicant was confirmed for both women and men subjects. While some sex differences appeared, there was

⁴ No correction for discontinuity is necessary with χ^2 analyses of 2×2 contingency tables which are derived from a larger table. The 2×2 chi squares must add up to the χ^2 for the complete table; this would not occur if corrections for discontinuity were taken when analyses of single degrees of freedom were made.

no interaction of sex with the main experimental conditions. An explanation of these results in terms of Zajonc's familiarity-breeds-attraction hypothesis can be rejected on the basis of evidence that familiarity with an unpleasant supplicant led to unfavorable evaluation of him, but also increased helpfulness.

It would seem that what familiarity does here is not necessarily to enhance evaluative attitudes, but to eliminate some of the wariness with which people view unfamiliar strangers. Zajonc himself discussed a similar point; he cites the animal behavior literature showing that the initial reaction to a novel stimulus tends to be fear, freezing, or avoidance (12). With additional nonthreatening exposure, curiosity may be aroused, and response conflict may indicate that it is less liked rather than better liked. Maddi (8), in his comments on Zajonc's paper, makes a similar point. He comments that "It would seem fruitful to consider meaning and familiarity to be different factors, although participating in interaction with each other . . ." (8, p. 23). The present study shows such an assumption to be fruitful indeed. Familiarity did change the meaning of the object (here a person), and response to it and evaluation of the object depended on what kind of object-behavior the subjects were familiar with. Positive action (acceding to a request for a quarter) and excuse-giving, however, followed an increase in familiarity, regardless of the shape that meaning took in this particular situation. In other situations familiarity might not lead to positive action—particularly if familiarity included recognition of potential danger.

Harrison's response-competition hypothesis may have some relevance here (5). This hypothesis states that familiarity reduces response-competition and that raised affect follows from the latter rather than directly from familiarity. In the present study familiarity with an unpleasant stranger did not make him particularly likable, but the reduced response competition brought on by familiarity may have made the interaction with him more pleasant. Whatever the case, the hypothesis presented here is similar to Harrison's in that the observed effects are predicted to flow from reducing response competition by lessening the tendency to be inactively wary with a stranger. What was strongest then was, in the experimental conditions, the tendency to help a stranger in need.

The finding of no difference in helping rates for the two experimental conditions, in spite of differences in requester attractiveness, remains "a major puzzle" (11, p. 249). Among the explanations offered by various

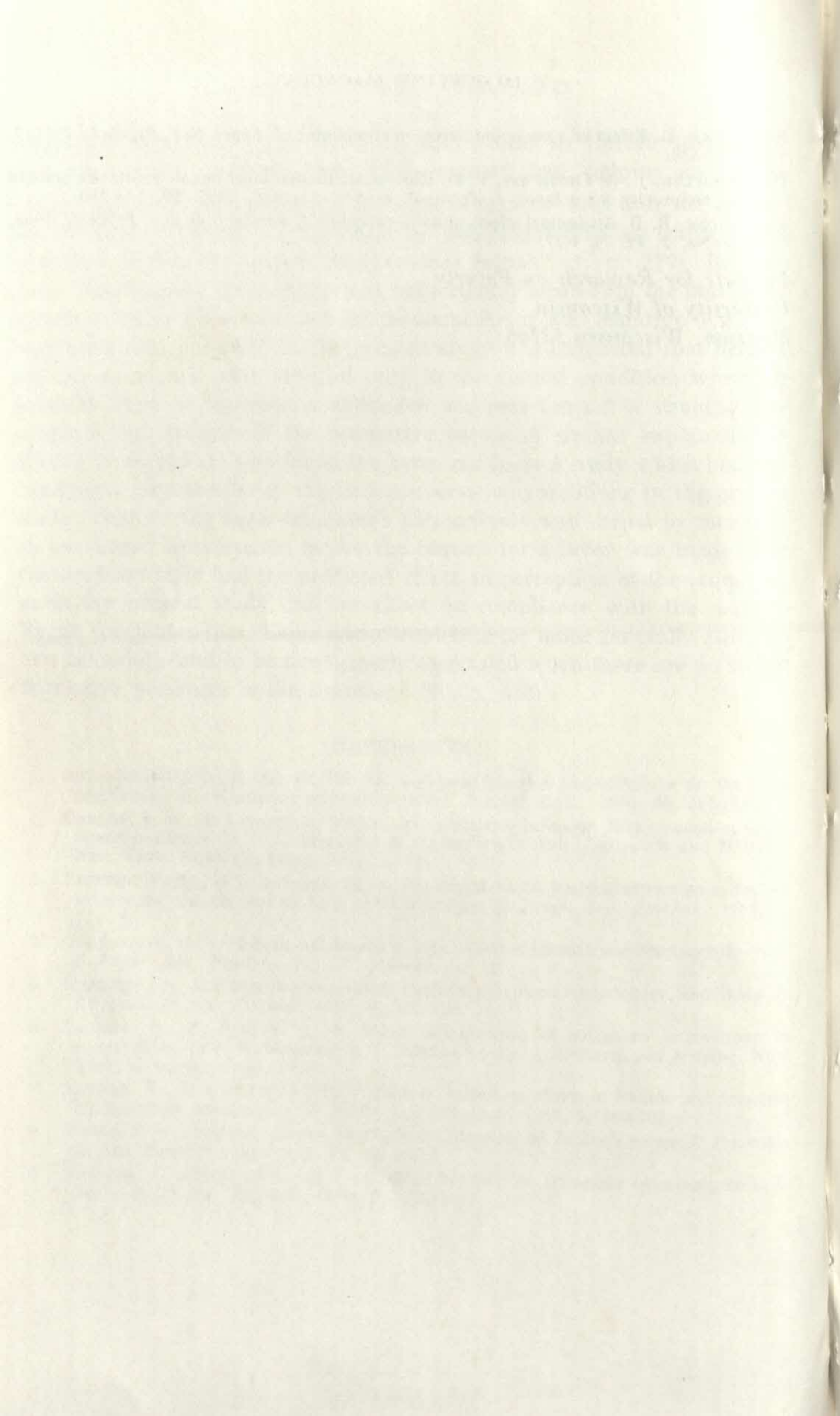
writers [see Nemeth (9, pp. 309-311)], that offered by Epstein and Hornstein seems most relevant here. They suggest that "helping another is fostered by both normative and personal influences" and that the normative influence "should be regarded as impersonal and as transcending incidental situational and/or interpersonal factors" (3, p. 279). In their study, they suggest that helping was reduced only when *both* the normative influences were weakened and the personal factor was negative (e.g., the supplicant was disliked). In the present study it is suggested that helping and excuse-giving were reduced only in the control condition when the personal need to maintain a defensive wariness toward a stranger outweighed the strength of the normative factor. A similar explanation is offered by Regan (1) who found the same results in a study which had two conditions very similar to the two conversation conditions in the present study. That is, the favor-requester's pleasantness was varied by means of an overheard conversation before the request for a favor was made. The conversation style had the predicted effect on perception of the requester, as in the present study, but no effect on compliance with the request. Regan speculates that "liking and compliance (or more generally attitudes and behavior) tend to be most closely associated when there are no strong normative pressures in the situation" (10, p. 638).

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INFORMATIONAL VERSUS AFFECTIVE DETERMINANTS OF INTERPERSONAL ATTRACTION*¹

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SUMMARY

Three experiments were conducted to explore the role of informational or cognitive processes in the similarity-attraction relationship. In all three, the usual attraction methodology was reversed; subjects were given attraction information and asked to indicate the attitudes of a stranger which would elicit that response. In Experiment I ($N = 42$), as experimenter-provided attraction information became more positive, assumed similarity increased ($p < .001$). In Experiment II ($N = 108$), the reversed attraction-similarity effect was again demonstrated ($p < .0001$), but subjects revealed no similarity-attraction effect based on information unless attitudinal content was also present. In Experiment III ($N = 96$), positive evaluation and attraction information was found to influence proportion of similar assumed attitudes and also assumed response discrepancy. It was concluded that both affective and informational components contribute to the attraction process.

A. INTRODUCTION

It is well established experimentally that similarity plays an important role in determining interpersonal responses (4, 5). Significant similarity-attraction effects have been reported, for example, with respect to personality characteristics (32), attitudes (3), economic status (14), and self-descriptions (19). Finding that attraction increased as a positive linear function of proportion of similar attitudes, Byrne and Nelson (11) formalized the relationship as a low level empirical law.

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In the reinforcement model devised to account for these relationships (7), it is proposed that an attitudinal stimulus that is similar to the subject's own position elicits a positive affective response which, through association, can be conditioned to another person. In the same way, disagreement elicits negative affect which, through association, can also be conditioned to another person. Perceived similarities and dissimilarities are assumed, respectively, to be positively and negatively reinforcing and to produce pleasant and unpleasant affective responses. The relationship between attitudinal stimuli and affect has been shown with respect to self-ratings of feelings (7, 27), physiological responses (15), and independent manipulations of affect (18, 21). The experienced quality of those affective responses is reflected in the subject's reported liking or disliking of the individual associated with the attitudinal stimuli.

Even though the similarity-attraction data have been interpreted in affective terms, it seems likely that informational or cognitive processes are also operating. For example, the subject has observed that his friends hold beliefs that are similar to his own and therefore the subject may be responding to some degree on the basis of his memory of such observations. Scott (34) devised a situation in which the subject was the observer of an attraction experiment and had the task of predicting the attraction responses of one student toward a second student on the basis of the attitude responses of each. The obtained responses were very similar to those usually found in conventional attraction experiments, suggesting the operation of informational rather than affective factors. In addition, several investigators have shown that various kinds of positive and negative expectancies are elicited by the similar and dissimilar attitudes of a stranger (16, 20, 26). While it is not logical on the basis of such studies to reject the affect interpretation and to accept an informational or cognitive expectancy interpretation of attraction responses, they do suggest the operation of cognitive factors under certain conditions.

If cognitive factors are operating in the attraction process, they would be reflected in those instances in which an individual assumes that liked others are more similar to himself than are disliked others. Numerous studies have shown that individuals do, in fact, assume more similarity to liked than to disliked others. Significant relationships between attraction and assumed similarity have been found for values (33, 35, 36), personality characteristics (2, 17, 25), and attitudes (1, 6, 12, 28, 30, 31). One study, however, found no consistent changes in either assumed similarity or attraction as a result of changes in the other (24). In the studies to date, the

causal processes operating in the attraction-similarity relationship have been obscured by multiple variables. These studies can be dichotomized into those in which the subject's responses are based on his interaction with the other person (i.e., friends or spouses) and those laboratory studies in which information is given to manipulate attraction. In the interaction studies, any number of variables could be operating to determine the relationship between attraction and assumed similarity. In the laboratory studies, the effect of the prior information manipulation undoubtedly has some effect on the assumed similarity responses. Ideally, attraction would be established without any interaction taking place and without any prior information as to similarity.

In the present paper, three experiments are reported in which attempts were made to specify the nature of the relationship between attraction and assumed similarity. In all three, the usual attraction research methodology (4) was reversed by experimentally manipulating attraction and asking the subject to predict how a stranger (toward whom they were attracted) would respond with respect to attitude similarity. In effect, these experiments test the reversibility of the similarity-attraction relationship in order to provide evidence concerning affective *versus* informational components of the relationship. To the extent that subjects assume that similarity is a function of liking, it would suggest that at least in part, cognitive factors play a role in the ordinary similarity-attraction relationship. While the Byrne-Clore model at present includes only reinforcing stimuli, implicit responses, and evaluative responses, the demonstrated operation of cognitive factors when the situation is reversed would indicate the possible utility of taking such factors into account in the prediction of attraction responses. That is, the cognitions that the subject brings with him to the experiment might be expected to contribute to attraction variance.

B. GENERAL PROCEDURE

The Interpersonal Judgment Scale has been used as the measure of attraction in much of the previous research (4) and was used in the present studies as the means of manipulating attraction information. The scale consists of six items: intelligence, knowledge of current events, morality, adjustment, liking for the stranger, and the stranger's desirability as a work partner. Each item is arranged as a seven-point scale, and the sum of the last two items (ranging from 2 to 14) constitutes the attraction response.

In each of the three studies, subjects were given the Interpersonal Judgment Scale which had been filled out by the experimenter to represent

one of three levels of attraction. Subjects were then instructed to complete an attitude scale just as a same-sex peer would have had to respond in order to have been evaluated as indicated by the Interpersonal Judgment Scale. The independent variable is thus experimenter-provided attraction information to which the subject presumably responds on a cognitive rather than an affective basis. The dependent variable is the proportion of attitude items on which the subject assumes that the other person is similar to himself. A similar item was defined as one for which the subject's responses (for self and assumed other) were on the same side of the neutral point of the six-point scale.

The relationship describing attraction as a linear function of proportion of similar attitudes has been found to be $Y = 5.44 X + 6.62$, where Y is the attraction response and X is proportion of similar attitudes (11). On the basis of the original Byrne-Nelson data, a new formula was derived describing proportion of similar attitudes as a function of attraction or $X' = .32 Y' - .99$ where X' is proportion of similar assumed attitudes and Y' is the attraction information (attraction score divided by 2). In the ordinary situation, if Y is purely a function of the affective responses elicited by X , it would not be expected that assumed similarity would be a function of experimenter-provided attraction information. If the similarity-attraction relationship is purely a function of cognitive components, it should be reversible in the laboratory, as well as mathematically.

C. EXPERIMENT I

1. *Method*

The subjects were 42 students from classes in introductory psychology and psychological statistics at the University of Texas. Each subject responded to a 24-item Survey of Attitudes consisting of six-point scales dealing with a heterogeneous series of topics.² The subjects were divided into three groups and were given an Interpersonal Judgment Scale that had been filled out with an attraction response totaling either 7, 9, or 12. These attraction values correspond to .13, .45, and .93 predicted similarity, respectively, in the reversed equation. The first four items on the Interpersonal Judgment Scale were filled out consistently with the last two on the basis of responses given by subjects in previous attraction experiments.

The subjects were asked to fill out the 24-item attitude scale as a

² Most of the subjects had been pretested on the attitude scale, but the statistics class and several from the introductory class had not been. They were therefore run separately and tested at the time of the experiment. The results did not differ under the two procedures.

stranger would have in order to be evaluated in the indicated way. Afterward, they were asked to fill out the attitude scale again, this time as they thought the average university undergraduate would do. This last response was obtained in order to differentiate the general assumption of similarity from that determined by the attraction information and also to determine the extent to which assumed similarity was specifically assigned to the stranger as opposed to a general halo effect in ratings evoked by the attraction information.

2. Results

The proportion of agreements between subject and stranger and between subject and average student are presented in Table 1 for each level of

TABLE 1
MEAN PROPORTION OF SIMILAR ASSUMED ATTITUDES AS A FUNCTION OF
EXPERIMENTER-PROVIDED
ATTRACTION INFORMATION FOR EACH COMPARISON PAIR

Comparison pair	Attraction information			df	F
	7	9	12		
Subject-stranger	.54	.65	.84	2 / 39	14.8*
Subject-average student	.69	.78	.74	2 / 38	1.5

* $p < .001$.

attraction information. As may be seen, analysis of variance³ indicated a significant effect only for the subject-stranger condition. As experimenter-provided attraction information became more positive, assumed similarity increased; the findings with respect to assumed similarity of an average student provided evidence that the subjects responded discriminatively to the hypothetical stranger who evoked the attraction ratings. At a general level, then, the similarity-attraction relationship is found to be reversible in that proportion of similar assumed attitudes is a positive function of experimenter-provided attraction information.

At a more specific level, the conclusions must be modified somewhat. The obtained proportions are .54, .65, and .84 as compared to the predicted proportions of .13, .45, and .93. The present data suggest that a new formula must be written in order to predict assumed similarity from attraction information. This formula is $X' = .12Y' + .11$. The slope for this equation is significantly different from the slope derived from the

³ The degrees of freedom for the subject-average student pairs were reduced, since one subject had failed to complete the attitude scale for the average student.

Byrne-Nelson data ($t = 9.06$, $df = 40$, $p < .001$). It may be seen that the similarity-attraction predictions are not precisely reversible. It seems quite possible that the difference between the attraction-similarity function derived from the Byrne-Nelson data and that obtained here reflects the absence of an affective component in the actual reversed situation.

D. EXPERIMENT II

The results of the previous experiment suggest that both cognitive and affective elements are operative in the usual similarity-attraction situation. A second experiment was undertaken in an attempt to differentiate further these two classes of variables. What would happen in the original similarity-attraction situation if affect were removed? The general reasoning was that responses to specific attitudinal content (e.g., "I prefer the Republican Party.") should be in part a function of affective components, whereas response to information about similarity (e.g., "Another person is about 50% similar to you in his attitudes.") should be almost entirely a function of cognitive components. It was also deemed advisable to attempt to replicate the results of Experiment I.

1. *Method*

The subjects were 108 students enrolled in an introductory psychology class at the University of Texas. They were pretested on the 24-item attitude survey prior to the experimental sessions. The experiment consisted of two separate 2×3 factorial designs. In the first design, half of the subjects were presented with the attitude survey prepared to indicate proportions of .21, .50, or .79 similarity (attitude group). The stranger's scale was thus simulated as agreeing with the subject on 5, 12, or 19 of the 24 items. Each subject in the other half was simply told that a stranger was 20%, 50%, or 80% "similar to you on a variety of personality and attitude scales" (percentage group). In the second design, the judgment task was reversed as in Experiment I. Subjects in each group were given Interpersonal Judgment Scales already completed with attraction scores totalling 7, 9, or 11. The remaining four items were given scores congruent with those on the attraction items. Half of the subjects were given an attitude scale and asked to fill it out as a stranger toward whom they were so attracted would have done. The other half was told to indicate on a scale of percentages "how similar the stranger is to you on a variety of personality and attitude measures."

2. *Results*

The mean attraction responses for the first design are presented in Table 2. Analysis of variance yields a significant effect for attitude similarity ($F = 3.51$, $df = 2/48$, $p < .05$), for mode of presentation ($F = 24.19$, $df = 1/48$, $p < .0001$), and for the interaction ($F = 6.69$, $df = 2/48$,

TABLE 2
MEAN ATTRACTION RESPONSE AS A FUNCTION OF PROPORTION OF
SIMILAR ATTITUDES AND METHOD OF PRESENTATION

Method of presentation	Proportion of similar attitudes		
	.21	.50	.79
Attitudes	6.55	8.11	10.78
Percentage	11.22	12.00	10.67

$p < .01$). It may be seen that the attitude group evidenced a strong relationship between similarity and attraction, whereas in the percentage group no relationship was found. Here, affectively laden stimuli clearly yielded the usual similarity-attraction effect but informational stimuli failed to do so.

The mean proportion of similar assumed attitudes for the second design are presented in Table 3. Analysis of variance indicated a main effect for both attraction ($F = 14.36$, $df = 2/48$, $p < .0001$) and for mode of response ($F = 15.30$, $df = 1/48$, $p < .005$), but not for the interaction ($F < 1$). When guessing the stranger's attitudes, as in Experiment I, sub-

TABLE 3
MEAN PROPORTION OF SIMILAR ASSUMED ATTITUDES AS A FUNCTION OF
EXPERIMENTER-PROVIDED
ATTRACTION INFORMATION AND MODE OF RESPONDING

Mode of responding	Attraction information		
	7	9	11
Guess attitudes	.48	.66	.77
Guess percentage	.27	.43	.63

jects once again revealed the positive relationship between attraction and assumed similarity. The replication yields results much like those obtained originally. When asked to guess percentages, however, subjects assumed significantly less similarity than when asked to guess responses to specific attitudes.

E. EXPERIMENT III

As a further attempt to explore the reverse relationship it was decided to manipulate the context in which the attraction information was presented to the subjects. When attraction is the dependent variable, subjects are found to respond to various combinations of positive and negative stimulus information in regular and predictable ways (e.g., 8, 9, 10). With proportion of similar assumed attitudes as the dependent variable, do subjects respond to various combinations of positive and negative evaluation information? Specifically, the evaluation information contained in all six items of the Interpersonal Judgment Scale was manipulated.

1. *Method*

Students in a personality psychology class at the University of Illinois (Chicago Circle Campus) were pretested on a 44-item attitude scale. Five weeks later, the experimental portion of the study was conducted with 96 subjects.

Nine experimental conditions were created, three of which were like those on the previous two experiments and six of which constituted new manipulations. Three conditions were created in which all of the information was positive (all six items, ++; only the two attraction items with no evaluation information, 0 +; or only the first four evaluation items with no attraction information, + 0). Three conditions were created with either mixed or neutral information (positive evaluation items and negative attraction items, + -; negative evaluation items and positive attraction items, - +; or no evaluation information and neutral attraction items, 0 N). The final three conditions consisted of negative information (all six items, - -; negative evaluation items and no attraction information, - 0; or no evaluation information and negative attraction items, 0 -). Negative evaluation information was defined as 2 on each of the four scales, and positive evaluation information as 6 on each of the four scales. Negative attraction information was defined as 1 and 2 on the two items (attraction = 3), neutral attraction information as 4 and 4 (attraction = 8), and positive attraction information as 7 and 6 (attraction = 13).

All subjects were asked to fill out the 44-item attitude scale as an individual of the same sex would have had to do in order for the subject to have evaluated him in the indicated way.

An added variable of interest was the assumed discrepancy between the subject's own attitude responses and the attitudes attributed to the stranger. Discrepancy is defined as the number of scale points (varying

from 0 to 5 on the six-point scales) separating the two sets of responses on each item. Actually discrepancy has been found to influence attraction in addition to the effects of attitude similarity (13, 29).

2. Results

The means of the assumed similarity and discrepancy scores for each group are presented in Table 4. As a result of one necessarily missing cell (0

TABLE 4
PROPORTION OF SIMILAR ASSUMED ATTITUDES AND ASSUMED DISCREPANCY PER ITEM
TOWARD STRANGERS
WITH VARYING PATTERNS OF EXPERIMENTER-PROVIDED EVALUATION AND ATTRACTION
INFORMATION

Evaluation-attraction information	N	Proportion of similar assumed attitudes	Assumed discrepancy per item
+ +	15	.86	.60
0 +	16	.85	.81
+ 0	5	.79	.94
+ -	8	.64	1.34
- +	7	.61	1.59
0 N	14	.51	1.62
- -	8	.34	2.50
- 0	10	.42	2.30
0 -	13	.33	2.75

0), *t* tests were computed between each pair of groups rather than an overall analysis. The significance levels⁴ corresponding to the resulting 36 comparisons of proportions of similar assumed attitudes are presented in Table 5. As can be seen, there are no significant differences among any of the all positive (+ +, 0 +, + 0) conditions, among any of the all neutral or mixed conditions (+ -, - +, 0 N), or among any of the all negative conditions (- 0, - -, 0 -). It appears that the stimulus for proportion of similar assumed attitudes was some combination of the units of experimenter-provided evaluation information. The results for the discrepancy scores are essentially identical to those for assumed similarity.

F. DISCUSSION

The results of this series of experiments lead us to two somewhat different conclusions. First, in the usual similarity experiment, responses to the attitudes of a stranger are not at all like responses to information

⁴ The significance levels used were conservative in that the degrees of freedom were adjusted as a result of unequal sample size and unequal variance (22).

TABLE 5
SIGNIFICANCE LEVELS OF INTERGROUP COMPARISONS ON
PROPORTION OF SIMILAR ASSUMED ATTITUDES

Evaluation- attraction information	Evaluation-attraction information Groups								
	++	0+	+0	+-	-+	ON	--	-0	0-
++									
0+	NS								
+0	NS	NS							
+-	**	**	NS						
-+	**	**	*	NS					
ON	**	**	**	NS	NS				
--	**	**	**	**	*	NS			
-0	**	**	**	*	*	NS	NS		
0-	**	**	**	**	*	*	NS	NS	NS

Note: NS = not significant.

* $p < .05$.

** $p < .01$.

indicating degree of similarity. That finding alone would suggest that subjects tend to respond entirely on the basis of affect elicited by similar and dissimilar attitudes and not on the basis of information about similarity. Second, in the reverse situation in which subjects are given attraction responses and asked to generate the appropriate stimuli for such responses, it is apparent that the reverse attraction-similarity relationship can be easily evoked. Possibly on the basis of their own interpersonal experiences, subjects respond to attraction information with appropriate similarity levels, though this relationship is not identical to that actually obtained when similarity is manipulated. It seems, then, that both affective and informational components are involved in the relationship between attitudinal agreement and attraction.

One possibility raised by the demonstration of information or cognitive influences is that the usual similarity-attraction relationship is attributable to demand characteristics. Subjects know that similarity and attraction are supposed to be related, they wish to perform as good subjects, and they supply the "correct" answers to the experimenter. There are three types of evidence which argue against an easy reliance on demand characteristics to explain the similarity-attraction findings. First, in Experiment II it was found that subjects failed to respond to similarity information in the way that they responded to actual similarity-dissimilarity of attitudes. If demand characteristics were a powerful force in such a situation, the subjects in the percentage group had a clear-cut task in which they could acquiesce to the experimenter's demands, but they failed to do so. Second, Lamberth

and Byrne (23) found that only 18% of the subjects in a similarity-attraction experiment were able to guess correctly the experimenter's hypothesis, and that those who did guess correctly responded no differently from those who guessed incorrectly, and that the similarity-attraction relationship is astonishingly impervious to attempts to manipulate demand characteristics. Third, in an unpublished study by Barry Meadow at Purdue, it was found that in a multiple-choice situation two thirds of the subjects indicated that the most important determinant of attraction was similarity, but that the responses of these subjects in a similarity-attraction experiment was no different from the responses of the other third who felt that other variables are more important determinants of attraction. All in all, it does not appear that the results of attraction experiments are dependent on cognitively determined responses to the inferred expectancies of the experimenter.

These various findings also suggest that individuals are able to verbalize the similarity-attraction relationship only under special conditions. That is, the ubiquitous effect of attitude similarity-dissimilarity on attraction which has been demonstrated in over half a century of field studies and laboratory experiments must be a part of the interpersonal experiences and memories and expectancies of all of us. Nevertheless, most individuals cannot verbalize this relationship even after taking part in an experiment in which their behavior conformed to it, and they do not give the appropriate attraction responses when they are simply told how similar a stranger is. It may be that much of attraction research involves relatively unconscious, visceral responding to affect-eliciting stimuli. With additional cues, however, such as a choice of stated hypotheses about friendship or an explicit attraction level and an attitude scale to fill out, the similarity-attraction relationship is obviously part of the subject's response repertoire.

The results of Experiment I suggest that these college students expected other college students to express about .74 similarity of attitudes. From the Byrne-Nelson formula, attraction toward such a stranger in the absence of actual information about attitudes would be predicted to be 10.65. In an unpublished study at Purdue,⁵ Charles Gouaux found that attraction in that situation was approximately 11.00. Thus, students seemed to assume that others were relatively similar to themselves and that others were relatively likeable. When additional cues are provided, attraction and assumed similarity can depart from those values either positively or negatively.

⁵ Personal Communication.

The function derived in Experiment I to describe the attraction-similarity relationship was $X' = .12Y' + .11$. Cross-validation is provided by data in the second two experiments conducted by independent investigators at two universities with the use of attitude scales of different lengths. An additional problem is raised, however, by the subjects receiving evaluation information in Experiment III. When provided with inconsistent information (+ - and - +), subjects responded with intermediate levels of assumed similarity. Since the + - group yielded only a slightly (and not significantly) higher proportion of similar assumed attitudes than the - + group even though there are four evaluation and two attraction items, it may be concluded that the latter are about twice as important in determining the response as the former. A simple formula allows us to utilize all six items. That is, $Y' = (.5 \Sigma E + \Sigma A) / (.5 N_E + N_A)$, in which Y' is defined as experimenter-provided evaluative information, E as response to the first four items, and A as response to the last two items of the Interpersonal Judgment Scale, N_E as the number of evaluation items, and N_A as the number of attraction items. In Table 6 are shown the predicted and obtained values for the three groups in Experiment I from which the reverse equation was derived, the three groups in Experiment II which are a direct replication, and the nine groups of Experiment III in which there are various combinations of the two kinds of information. The predictive

TABLE 6
PROPORTION OF SIMILAR ASSUMED ATTITUDES AS A FUNCTION OF
EXPERIMENTER-PROVIDED ATTRACTION INFORMATION
($X' = .12 Y' + .11$)

Condition	Experiment	Attraction information	Proportion of predicted	Assumed similar attitudes obtained
0 +	III	6.50	.89	.85
+ +	III	6.25	.86	.86
Positive	I	6.00	.83	.84
+ 0	III	6.00	.83	.79
Positive	II	5.50	.77	.77
Neutral	II	4.50	.65	.66
Neutral	I	4.50	.65	.65
- +	III	4.25	.62	.61
0N	III	4.00	.59	.51
+ -	III	3.75	.56	.64
Negative	I	3.50	.53	.54
Negative	II	3.50	.53	.48
- 0	III	2.00	.35	.42
- -	III	1.75	.32	.34
0 -	III	1.50	.29	.33

power of this formulation may be seen both in Table 6 and graphically in Figure 1.

With respect to assumed similarity, it should be noted that subjects consistently tended to avoid the lowest end of the scale. For example, when provided with a somewhat negative score of 7, the obtained assumed similarity mean was .54 in the first experiment and .48 in the second. Even when subjects are responding to an extremely negative rating (a score of 3

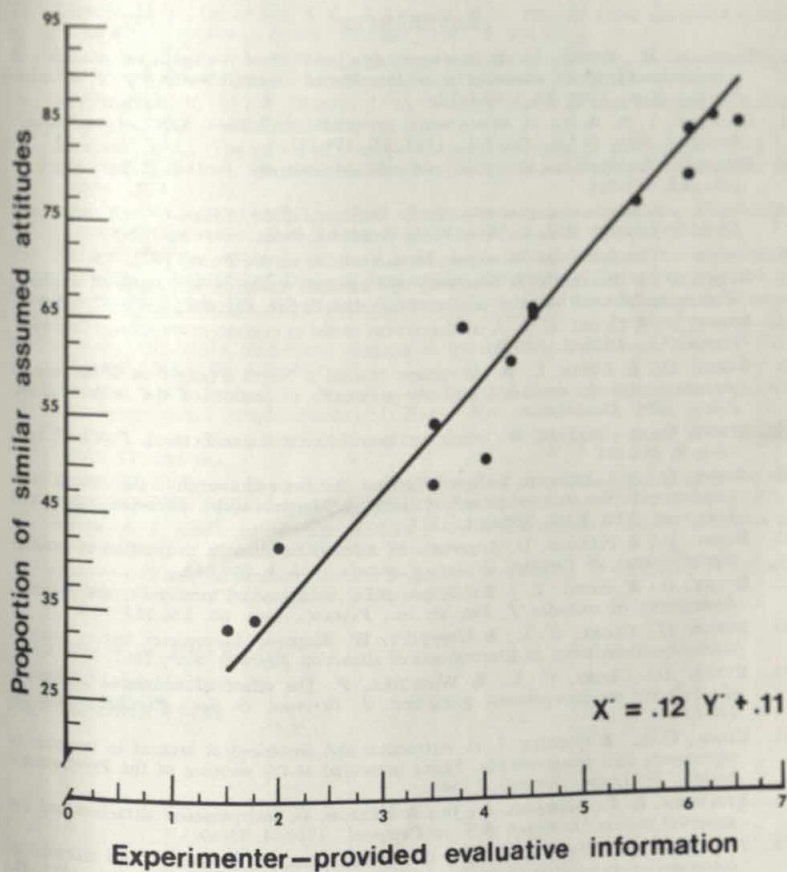


FIGURE 1

PROPORTION OF SIMILAR ASSUMED ATTITUDES AS A POSITIVE LINEAR FUNCTION
OF EXPERIMENTER-PROVIDED EVALUATION INFORMATION

in Experiment III), the proportion of assumed similar attitudes still reaches approximately .33, indicating only a moderate degree of dissimilarity. It is possible that subjects cannot easily conceive of another student with whom they are not similar on at least some attitudinal issues. It might well be that if subjects were asked to guess the attitudinal responses of strangers from quite different populations, this lower boundary of assumed similarity would be extended.

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SHOCK ELICITED AGGRESSION BY HUMAN SUBJECTS*

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SUMMARY

This study investigated the response of human Ss to aversive stimuli. Seven pairs of Ss were placed in a situation in which they would receive shocks, but had the opportunity to retaliate by delivering an equivalent shock to the S that had shocked them. Results were interpreted as being similar to studies of pain-elicited aggression with lower animals.

A. INTRODUCTION

Pain-elicited aggression has been found to occur in a variety of species: rats (4), snakes, turtles, chickens, hamsters (5), cats (6), and monkeys (1). Pain-aggression appears to be a general response to aversive stimulation. Johnston (2), however, indicated that an aggressive response resulting from the presentation of aversive stimuli is not a problem if human Ss are used, since no studies reviewed reported any form of aggressive behavior as a result of presentation of aversive stimuli.

It may be that the absence of reports of human aggression in the literature is a result of cultural and social taboos against human-subject investigations which provide the opportunity for aggression and require the presentation of aversive stimuli; or it may be that investigating aggressive responding by humans has been too dangerous to the Ss.

The main purpose of the present report was to evaluate the response of human Ss to the presentation of aversive stimuli in a situation in which aggressive retaliation was sanctioned, and to provide at least a partial analogy to pain-elicited aggression studies with lower animals.

B. METHOD

1. *Subjects*

The Ss were eight male and 10 female volunteers from general psychology classes at Boise State College, Boise, Idaho. All Ss were informed that

* Received in the Editorial Office, Provincetown, Massachusetts, on July 27, 1973. Copyright, 1975, by The Journal Press.

the experiment for which they were volunteering involved the use of electric shock. They were not told what specifically would happen or why and were not informed of the rationale of the experiment until they had completed it. Ss were given academic credit for participation.

2. *Setting*

The experiment took place at the Boise State College experimental psychology laboratory in two adjoining rooms. It was possible to see into either room from the other through a window in the wall connecting the two rooms. Both rooms contained a chair and desk which faced the window. On the desk in room A were finger electrodes, a telegraph key, and a small cue light. The apparatus in room B was similar; the difference between the two was the absence of the cue light in room B.

3. *Instructions*

Pairs of Ss were brought into a waiting room and then randomly assigned to either room A or room B. Subjects were individually taken to their assigned rooms and then individually given the following instruction:

1. Do you have any known heart or neurological problems? (If the answer was yes the subject was rejected.)

2. You are free to terminate the session at any time. If you do decide to terminate just speak up and someone will come to get you. Do not disconnect the apparatus or leave the room until you are told.

3. If shock is delivered it will come through these electrodes (at this time the finger electrodes were attached to the thumb and index finger of the right hand).

4. You may or may not get shocked.

5. (This instruction was given only to subject A) All you must do is press this telegraph key every time the cue light comes on.

6. The person participating in the experiment with you is visible through the window. (At this time *E* pointed to the window.)

7. The session is scheduled to last for 30 minutes. Are you ready?

4. *Optional Instructions*

In two cases Subject A temporarily failed to depress the key when the cue light came on. After *S*'s second consecutive failure to respond to the lights, *E* whispered under door A, "You're not following directions."

If Subject B had failed to depress his key and deliver a shock to Subject A after having received 10 shocks himself, *E* whispered through the vent in the door, "Why don't you try your key and see what happens?"

5. *Apparatus and Procedure*

Other than the apparatus previously described under Setting, the experiment was programmed on Lehigh Valley electromechanical equipment. The cue light in Room A was programmed to turn on for one second at 10-second intervals, at which time if *S* A was following directions, he depressed his telegraph key and delivered a 60 msec, 1 ma shock to the *S* in the opposite room. The reaction of an *S* to receipt of shock was easily visible to the *S* who delivered it. A depression of the telegraph key in either room produced a 60 msec, 1 ma shock to the finger electrodes in the room opposite the depressed key. All key depression responses were recorded on Gerbrands cumulative recorder and Lehigh Valley counters.

Immediately following the experimental session all *Ss* were brought in for an explanation of the experiment and debriefing by *E*.

C. RESULTS

One pair of male *Ss* were not allowed to participate in the experiment because one of the pair had been treated for epilepsy. The experimental session for one pair of female *Ss* was terminated by *E* because one female was crying and apparently experiencing stress not intended by the experiment. It may be noted here that she verbally resisted the termination. One pair of female *Ss* quit.

The results for the remaining *Ss* are presented in Figure 1. The sex pairings are indicated above the cumulative records of each pair. Key presses by *Ss* in Condition A were indicated by slashes on the event recorder; however, because of the high response rate, the slash marks appear a solid line. Key presses by subjects in Condition B are indicated by a slash mark and step on the cumulative record. The total number of key presses per *S* is indicated to the right of each record.

It may be seen from Figure 1 that only pair 2 delivered fewer than the number of shocks cued (180) and also that in all pairings but number 2 the subject (B) without the cue light delivered more retaliatory shocks than he received.

D. DISCUSSION

The cue light for *S* A did facilitate aggression, and *S* A began the experiment simply following directions by depressing the key when the cue light came on. Subject B had no cue light and was responding by delivering shocks when he chose.

One possible interpretation of the data is that a type of obedience to

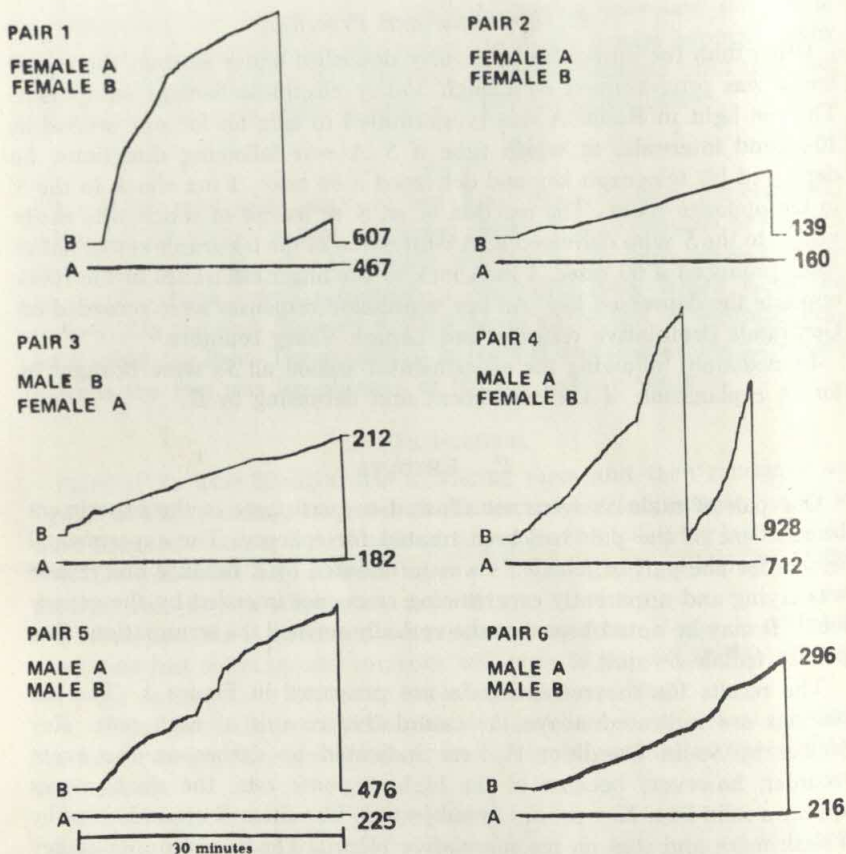


FIGURE I

SHOCKS DELIVERED BY SIX PAIRS OF SUBJECTS DURING A 30-MINUTE PERIOD

authority effect (3) could have been operating, but clinical impressions at debriefing sessions indicate otherwise. When *Ss* were asked, "Why didn't you quit?" most initially responded, "I don't know." But further questioning often led to comments like, "I was thinking about quitting until I found that I could get him back"; "Everytime I thought she was about to get me I would let her have it several times"; "I was trying to demoralize her." It should also be noted that at the time of the debriefing, *Ss* did not appear angry, but appeared to be embarrassed by their aggressive behavior.

The data would indicate that, for whatever reason, the human Ss in this study did respond with aggression when they were the recipients of aversive stimuli. This result would be consistent with the pain-elicited aggression data that has been found with lower animals.

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TASKS AND TASK CONSEQUENCES AS FACTORS IN INDIVIDUAL AND GROUP BRAINSTORMING*¹

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SUMMARY

The present study investigated the effects of relevant *versus* irrelevant tasks and task consequences on individual and group brainstorming performance. As hypothesized, significantly fewer ideas were produced by groups than by individuals, and by subjects working on an inherently salient, or "relevant," task, than on an innocuous, or "irrelevant," task. The effect of knowing that the ideas might actually be used by a familiar organization depressed brainstorming effectiveness further. It was concluded that the ability to brainstorm is impaired when the task is one in which people are genuinely interested and which they care about.

A. INTRODUCTION

Studies of brainstorming consistently have found that "nominal" groups of individuals produce more ideas than real groups (1, 2, 3, 4, 5, 6, 8, 9). To explain these results, many factors have been suggested as possible inhibitors of group performance: e.g., members' fear of criticism, "falling into a rut," pressure towards conformity, and the inability of groups to withhold evaluation of ideas. Surprisingly, however, the nature of the task as a factor in brainstorming performance has received very little systematic attention.

Tasks employed in studies of individual and group brainstorming typically have been irrelevant and inconsequential. They have not dealt with current or controversial issues, nor have they had direct personal implications for the college students who have comprised the bulk of the subject population. Indeed, the brainstorming tasks used in most studies represent little more than innocuous puzzles or games.

* Received in the Editorial Office, Provincetown, Massachusetts, on August 6, 1973. Copyright, 1975, by The Journal Press.
¹ Reprint requests should be sent to the second author at the address shown at the end of this article.

An exception is a study conducted by Dillon, Graham, and Aidells (5) during the "reconstitution" period, at the University of California, Berkeley, which followed the U.S.'s invasion of Cambodia in spring, 1970. In this study, the subjects were concerned students who volunteered their time to provide input to a campus "think tank" as to how private individuals might influence U.S. foreign policy. In view of the turmoil on campus at the time, the task was obviously "relevant." However, since the study did not include a less relevant task, it was not possible to examine directly the effects of relevancy on individual and group brainstorming performance.

The main purpose of the present study was to investigate task characteristics as possible determinants of brainstorming performance. Specifically, it was hypothesized that individuals and groups would produce more ideas in connection with innocuous, game-like problems than with important relevant problems. It was also expected that more ideas would be produced when brainstorming was conducted under purely experimental conditions with no prospect of generated ideas being put to use.

B. METHOD

1. *Subjects*

The participants in this study were 128 male undergraduate psychology students from the University of California, Berkeley.

2. *Procedure*

The Thumbs problem was used as representative of the brainstorming tasks employed in previous studies:

We do not think this is likely to happen but imagine for a moment what would happen if everyone after 1971 had an extra thumb on each hand. This extra thumb will be built just as the present one is, but located on the other side of the hand. It faces inward, so that it can press against the fingers, just as the regular thumb does now. Here is the question: What practical benefits or difficulties will arise when people start having this extra thumb?

The Ecology problem was created to represent an inherently relevant brainstorming task:

Many people have made an extensive analysis into the effects of overpopulation, chemical pollution, and air and water pollution. A frequent conclusion is that the next 5 to 10 years are critical because if significant changes in our society are not made by then, it may be too late to save the environment and maybe even future lives. Students are often more aware and more concerned

with the environmental crisis than the majority of Americans. Therefore, what as *students* can you do to effectively implement significant changes in the society in order to halt and alter the present trend?

The subjects were randomly assigned to conditions in a $2 \times 2 \times 2$ factorial design. The factors were individual *versus* group brainstorming, type of problem, and consequences *versus* no consequences.

Those assigned to work in the group brainstorming condition were given instructions on the uses and procedures of brainstorming. Those in the individual brainstorming conditions were given similar but appropriately modified instructions. Instructions for brainstorming were the same as those used in earlier studies (1, 2, 3, 4, 5, 6, 7, 9).

Additional instructions were given to subjects assigned to the consequences conditions. Those who received the Thumbs problem were told in some detail that their ideas and solutions to the problem would be sent to the San Francisco Educational Television Station as possible suggestions for a parody of the human race to be aired within the subsequent few months.

Subjects who received the Ecology problem were told that their ideas and solutions to the problem would be sent to the Berkeley Ecology Center as suggestions as to how *students* can aid in preserving the environment.

At this point all subjects were reminded of the rules of brainstorming and told that they would have 20 minutes to work on the problem. The problem was reread, and for subjects in the consequences conditions, the added instructions were also reread.

3. Scoring

The criterion measure was the number of different ideas generated. To provide a comparison between individuals and groups, nominal four man groups were created by randomly combining the scores of subjects in the individual brainstorming conditions. Overlapping ideas within nominal and real groups were deleted. The system for determining the number of ideas was the same as that used in earlier studies (1, 2, 3, 5, 7).

C. RESULTS AND DISCUSSION

The means for the number of ideas generated in the eight experimental conditions are shown in Table 1. As in previous studies, individual brainstorming produced significantly more ideas than group brainstorming ($F = 243.68$, $p < .01$). The main effects for type of problem and consequences were also significant ($F = 10.47$, $p < .01$, and $F = 9.28$,

TABLE 1
MEAN NUMBER OF IDEAS GENERATED IN EIGHT EXPERIMENTAL CONDITIONS

Type of problem	Group brainstorming		Individual brainstorming	
	Consequences	No consequences	Consequences	No consequences
Thumbs	39.00	52.25	76.25	89.25
Ecology	29.25	36.50	79.00	77.75

$p < .01$), respectively. Fewer ideas were produced with the inherently more salient Ecology problem than with the Thumbs problem. Also, the general effect of consequences was to inhibit idea generation. Presumably, this result occurred because the effect of the task consequences increased the relevance of the problem. Although this effect appeared to be greater for group brainstorming than for individual brainstorming, the interaction term was not significant. In fact, none of the interaction terms was significant.

In conclusion, the results of this study are in line with past research in that individual brainstorming was found to be highly superior to group brainstorming. Furthermore, the findings support the contention of Dillon, Graham, and Aidells (5) that brainstorming performance is impaired when the task is one which people are interested in and which they care about. Our observation is that this impairment is particularly severe for groups. It appears that people are less able to adhere to brainstorming rules when they have a genuine concern about the outcome.

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RECIPROCITY IN IMPRESSION FORMATION*¹

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SUMMARY

Premeasures of self-acceptance, acceptance of others, and a self-rating were obtained from 134 male students. After working with a confederate on a standard task, each received a favorable, a neutral, or an unfavorable rating from the confederate. A multivariate analysis of variance showed that persons high in self-acceptance reciprocated, rating a confederate lower after receiving his average or unfavorable evaluation. They agreed with a favorable evaluation and disagreed with an unfavorable one. Those low in self-acceptance not only started with a less favorable first rating of the confederate but decreased the favorability in their second rating consistently even after a favorable evaluation from the confederate. They agreed only slightly more with a favorable than with an unfavorable evaluation of themselves. Individual differences in response to evaluations were viewed from the perspectives of social exchange and dissonance theories. A control group showed no significant differences between their first and second ratings of a confederate.

A. INTRODUCTION

In social psychology and in everyday life it is a well known phenomenon that whenever persons interact, each controls the behavior of the other to some extent in a process called reciprocity. When a person reciprocates, he returns in kind and quantity to another what he has received from him; in negative retribution he redresses harm, in positive reciprocity he repays a benefit. Total reciprocity, in which what one gives and what one receives

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are identical, seems rather an exception; usually the exchanged objects are equivalent rather than identical. These processes operate not only where tangible goods and services are exchanged, but also at the symbolic level when one individual influences the impression a second holds of him.

There are several theoretical models designed to account for reciprocating behavior, with some theorists, Malinowski (17) and Gouldner (10), taking the sociological outlook of functionalism. From their perspective, reciprocity sustains group life in social systems; without reciprocity no well integrated group life could develop. There are also psychologically oriented explanations of reciprocity emphasizing the individual rather than the group, the most important of which are social exchange theory and consistency theory. In social exchange theory, developed by Homans (14), Thibaut and Kelley (23), Blau (5), Adams (2), and Gergen (9), reciprocating behavior is a means of maximizing outcomes. In any situation a person weighs the options open to him and chooses the alternative that will give him maximum reward at minimum cost. The actor chooses between returning benefits and repaying harm on the basis of the benefits he anticipates from his choice. The anticipated outcomes are not different between persons high or low in self-esteem (15).

Consistency theorists, Abelson, Aronson, McGuire, Newcomb, Rosenberg, and Tannenbaum (1), on the other hand, postulate that reciprocity is a mode of dissonance reduction rather than an attempt to maximize pay-offs. With respect to evaluations the most important cognition is a person's self-concept. Within this framework dissonance is induced if a person low in self-esteem receives a favorable evaluation or a person high in self-esteem receives an unfavorable evaluation. Consonance exists, on the other hand, if self-concept and evaluation coincide. Consistency theory has given rise to many fruitful experimental investigations of response to evaluations (6, 7, 12, 13).

Jones (15) attempted a confrontation of predictions derived from a consistency model with those from social exchange theory. The two theories predict the same behavior for subjects high in self-esteem; such a person should reciprocate positively to favorable evaluations and negatively to unfavorable evaluations. The two theories make opposing predictions for persons low in self-esteem. According to social exchange theory the behavior of persons low in self-esteem should not be different from the behavior of those high in self-esteem; both would attempt to reinforce favorable evaluations and to reject unfavorable evaluations. For dissonance theory, on the other hand, the responses of those low in self-esteem,

who find a favorable evaluation inconsistent with their own self-concept, are expected to be unfavorable to a positive evaluator. Similarly, those low in self-esteem are expected to show acceptance of a low evaluation and of the evaluator. Testing the validities of the predictions derived from each theory, Jones found clear support for the social exchange model when his subjects tried to maximize their rewards by positively reciprocating to expressions of approval and negatively reciprocating to expressions of disapproval under conditions of both raised and lowered self-esteem.

The present investigation is concerned with reciprocity in impression formation. More specifically, we were concerned with the degree to which a person modifies his social perceptions in a dyadic interaction because of the favorability of an evaluation received from another person. We were also concerned whether individual differences in self-esteem modify tendencies to reciprocate and to agree with evaluations of differing favorability. The experiment was designed to answer the three following questions: What role does reciprocity play in impression formation in a dyadic situation? What is the effect of individual differences in self-esteem and acceptance of others on reciprocity to evaluations and agreement with them? Which theory—dissonance or social exchange—is better able to predict reciprocity to evaluations and agreement with them?

B. SUBJECTS

One hundred and thirty-four male college students from various courses were assigned randomly to the experimental treatment and control conditions. The confederates were two male seniors in psychology who served equally often in each treatment condition.

C. METHOD

To determine the extent of reciprocity in the realm of social perception, it was necessary to quantify the inferences about an individual's personality attributes that another person makes. We concerned ourselves with the good-bad dimension, as defined by Osgood (19, 20), measured on a nine-point scale. In selecting traits, attention was paid to Anderson's (3) normative data on the likability of 555 personality traits. In addition, the traits had to be considered important to the raters and not synonymous or closely related. Having observed these precautions, we used a simple, unweighted average to determine the final favorability of perception.

Two equivalent rating scales were constructed with 10 adjectives, such as objective, self-centered, imaginative, and interesting, appearing on both

scales, and seven adjectives where such synonyms as agreeable-friendly and persuasive-convincing appeared on each scale. Thus Scales I and II consisted of 17 adjectives each, plus five and three filler adjectives, respectively, which did not figure in the analyses.

Two persons, a naive subject and one of two confederates, participated at a time. We obtained three premeasures: their self-acceptance and acceptance of others measured by a questionnaire developed by Berger (4), and their self-rating on Rating Scale I. The experiment was introduced as an exploration of the relationship between compatibility of personality and ability to work on tasks together. Cognitive and insight tasks were given; the former required them to solve toothpick problems from a popular book of puzzles and to create plot titles from Guilford (11); and the latter, an insight task by Sargent (22), called for the understanding of human motives. The behavior of the two confederates was standardized as far as possible; they were instructed to give very similar answers throughout the experimental sessions. The order of the tasks which preceded the ratings was counterbalanced in order not to confound the effect of the task with the experimental treatment. After the first task subjects rated each other for the first time, on Rating Scale II which was used to present the confederate's evaluation of varying favorability. The favorable evaluation had a mean favorability level of 8, the neutral evaluation a mean of 5, and the unfavorable evaluation a mean of 2. For each evaluation the favorability was relatively consistent across the 20 traits of the scale. Subjects indicated their agreement with each trait rating on Likert-type scales where 1 represented strong agreement and 4 strong disagreement with the trait ratings. Then both persons worked on the second task and finally rated each other again, this time on Rating Scale I. This second rating was not exchanged. A fourth group, which received no evaluation from the confederate, served as a control to detect possible changes in the second rating due to the operation of factors other than reciprocity.

D. RESULTS

The data were analyzed with a multivariate analysis of variance (18) which examines the vector of means of the dependent variables rather than each dependent variable separately as in a univariate analysis of variance. Finn's (8) computer program for multivariate analysis of variance was used. The independent factors of the first multivariate analysis were the favorability of the evaluation received with three levels, the order of tasks

with two levels, and the effect of self-esteem measured by the self-acceptance scale of Berger (4) with scores dichotomized to yield two levels. The three dependent variables were first and second other-rating and the agreement with the evaluation from the confederate. Though each of these dependent variables consisted of the three subclasses of repeated, synonymous, and unique traits, it was decided to combine the ratings on synonymous and repeated traits into a single score, since their correlations were high, and to disregard the ratings on the unique traits which had no counterparts in the other scale. In this way we derived scores for first and second other-ratings which were the sums of the average ratings on the seven synonymous and the 10 repeated traits, with a minimum possible score of 2 and a maximum of 18. Similarly, the agreement with ratings was the sum of the average agreement with synonymous and repeated traits, with a minimum score of 2 and a maximum score of 8, since the agreement to a single item could vary only from 1 to 4.

The favorability of the evaluation had a significant effect ($p < .01$) on all three dependent variables taken together. There were also two significant interactions; one was a two factor interaction of favorability and self-esteem ($p < .01$), and the other was a triple interaction of favorability, order of tasks, and self-esteem ($p < .05$). To interpret these interactions we carried out separate analyses of variance for each of the three dependent variables. The interaction of favorability and self-esteem was significant only for second other-rating and agreement. The geometric representations of this interaction indicated a disordinal interaction with respect to both second other-rating and agreement (Figures 1 and 2). The graphic criterion for a disordinal interaction is that the other-rating scores of high and low self-esteem persons cross when plotted against treatment (16). The meaning of this disordinal interaction is that those high in self-esteem are differently affected by evaluations than low self-esteem Ss. This is true both in their agreement with evaluations and their reciprocating behavior in their second rating of the confederate. Only highs reciprocated in their second rating, lowering their second rating after having received an average or unfavorable evaluation from the confederate. Negative reciprocity after unfavorable evaluations was more pronounced than positive reciprocity after a favorable evaluation. High self-esteem Ss also varied their agreement with evaluations which varied in favorability, agreeing with a favorable evaluation and disagreeing with an unfavorable one. Low self-esteem Ss, on the other hand, did not reciprocate, but lowered

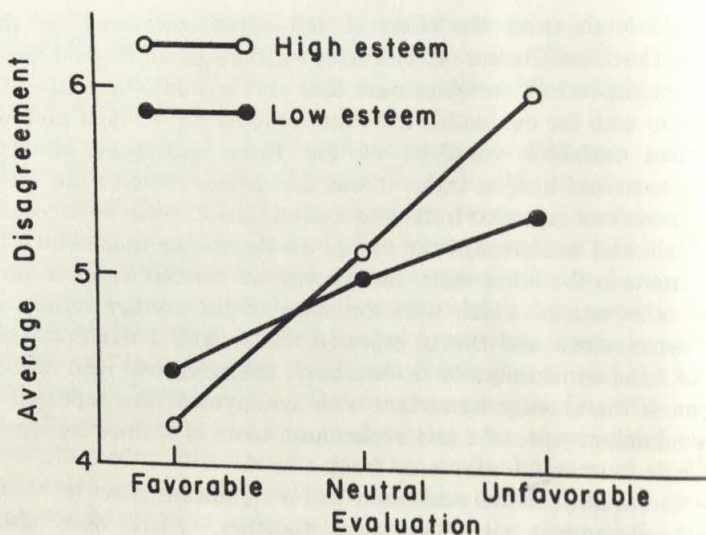


FIGURE 1

SECOND RATING OF THE CONFEDERATE BY SUBJECTS HIGH AND LOW IN SELF-ESTEEM WHO HAVE JUST RECEIVED FAVORABLE, NEUTRAL, AND UNFAVORABLE RATINGS FROM THE CONFEDERATE

their second rating of the confederate consistently even after a favorable evaluation from him. In addition, they differed very little in their agreement, tending to agree only slightly more with a favorable evaluation.

Similarly, to interpret the triple interaction, we looked at this interaction in the univariate F tests and plotted the relationships. The F tests of this interaction reached significance only with the first other-rating as the dependent variable. The geometric representation of this triple interaction revealed that high self-esteem S s were more favorable in their rating of the confederate than were low self-esteem S s. Furthermore, persons rated the confederate more favorably in their first evaluation after the cognitive task than after the insight task. Finally, the effect of self-esteem and of type of preceding task on the first rating was moderated by the third factor: namely, the favorability level of the evaluation which the subject is about to receive. Such a triple interaction on the first rating is hard to explain, since the favorability of an evaluation should not exert an influence before it is actually applied. The most likely explanation is to assume a nonrandom assignment of subjects to the consequent treatment; the other, less likely explanation is to assume a Rosenthal effect (21), which allowed the

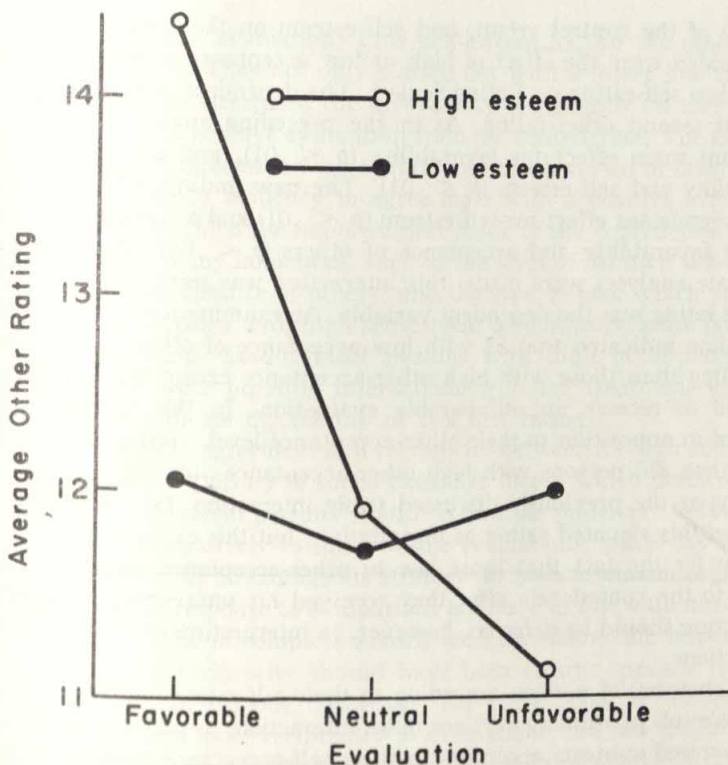


FIGURE 2

AVERAGE DISAGREEMENT OF SUBJECTS HIGH AND LOW IN SELF-ESTEEM WITH FAVORABLE, NEUTRAL, AND UNFAVORABLE RATINGS WHICH THEY HAVE JUST RECEIVED FROM THE CONFEDERATE

subjects to anticipate the treatment through nonverbal cues emitted by the confederate in the prerating task.

In a separate analysis, the control group showed no change from the first to the second rating of the confederate, indicating that merely working on the tasks had no effect on their impressions.

Two additional independent variables, whose effects were not examined in the foregoing analysis, were other-acceptance and self-rating on Scale I. Dichotomizing the subjects on their scores on these two scales, we derived two levels from each of these two factors. The second multivariate analysis of variance contained four independent factors; two were as before—the favorability of the evaluation received with four levels, since we included

the data of the control group, and self-esteem on the Berger scale—and newly added were the effect of high or low acceptance of others and of a high or low self-rating on Rating Scale I. The dependent variables were the first and second other-rating. As in the preceding analysis there was a significant main effect for favorability ($p < .01$), and an interaction of favorability and self-esteem ($p < .01$). The new findings of this analysis were a significant effect for self-esteem ($p < .01$) and a significant interaction for favorability and acceptance of others ($p < .05$). When separate univariate analyses were made, this interaction was significant only when the first rating was the dependent variable. An examination of this perplexing finding indicated that *Ss* with low acceptance of others gave a lower first rating than those with high other-acceptance except when they were assigned to receive an unfavorable evaluation. In this treatment they behaved in opposition to their other-acceptance level, giving a higher first rating than did persons with high other-acceptance. This interaction is as puzzling as the previously discussed triple interaction. One is tempted to interpret this elevated rating as ingratiation, but this explanation does not account for the fact that those low in other-acceptance gave the lowest rating to the confederate after they received his unfavorable evaluation. Conjecture should be deferred, however, in interpreting unreplicated triple interactions.

A dichotomy of persons according to their self-rating on Rating Scale I did not result in a main effect nor in an interaction, as was found when we dichotomized subjects according to their self-acceptance measured by the questionnaire of Berger (4). The two measures of self-esteem were apparently not equivalent; the self-acceptance score of Berger (4) appeared to have greater predictive value in this investigation.

E. DISCUSSION

The experiment revealed that the evaluation which the naive subjects received from the confederate affected their agreement, as well as their consequent second ratings. Yet the effect of the evaluation was different for subjects who differed on Berger's scale of self-acceptance. Only high self-esteem *Ss* reciprocated in the negative direction, decreasing their evaluation of the confederate after receiving an average or unfavorable evaluation from him. The drop in favorability after these two evaluations was more pronounced than the increase in favorability after a positive evaluation from the confederate. High self-esteem *Ss* also varied in their agreement with evaluations, agreeing with a favorable and disagreeing

with an unfavorable evaluation. Low self-esteem Ss, on the other hand, did not reciprocate. They not only started out with a lower first rating of the confederate, but decreased the favorability consistently on their second rating, even after a positive evaluation from the confederate. The lows also did not vary their agreement with evaluations which varied in favorability, showing only a slight tendency to agree more with a positive evaluation.

The first rating which the naive subject made of the confederate seemed to be affected by many influences, such as the level of his own self-esteem, the level of his acceptance of others, and the type of task which preceded the first rating. Persons with high self-esteem tended to be more favorable in their first rating, as did most persons with high other-acceptance. However, there were puzzling interactions with the treatment variables which seem to indicate the lability of this first rating.

The differences in agreement and reciprocity between Ss high and low in self-esteem seemed contrary to social exchange theory which predicted that high and low self-esteem persons would reciprocate positively to favorable evaluations and negatively to unfavorable evaluations, since this was assumed to be the most advantageous strategy for both to maximize payoffs. The differences in response to evaluations are more in line with dissonance theory, though to be in complete accord with the theory the responses of agreement and of reciprocity should have been clearly opposite for high and low self-esteem persons. However, the patterns of agreement with evaluations, as well as of reciprocity to evaluations, are not diametrically opposed for highs and lows; it seems rather that lows respond generally less to evaluations. These results indicate that individual differences in self-esteem should be controlled in research on impression formation. We should add, of course, that these results may be specific to American, middle class, male college students. It is known that there are marked cultural differences in the degree to which individuals observe various forms of reciprocity.

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ORDINAL POSITION, FAMILY ENVIRONMENT, AND MENTAL ABILITIES*

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SUMMARY

The relations between ordinal position, family environment, social status, and a set of mental abilities were examined for 185 11-year-old boys and their families, from Southern Ontario, Canada. Earlier born children tended to have higher verbal and number ability scores, but ordinal position was not related to reasoning and spatial abilities. When social status differences between the families were statistically controlled, the birth order differences in the verbal and number abilities remained significant. However, the birth order differences in the abilities were accounted for when variations in the family environments were controlled. The results provide support for the proposition that families establish different environmental experiences for children of differing ordinal positions and that the experiences are related to variations in mental ability scores.

A. INTRODUCTION

Research which has attempted to account for the relation between ordinal birth position and the cognitive performance of children has generally relied on the use of global explanatory variables, such as social status indicators and family structure characteristics. But the findings of the research are inconsistent. For example, in a study of approximately 37,000 11-year-old English children, Record *et al.* (20) found that birth order differences in verbal reasoning ability scores were primarily due to between-family differences measured in terms of father's occupation and maternal age at child's birth. Similarly, from an analysis of data on over 40,000 children who were tested in the Project Talent study, Burton (6) concluded that among socioeconomic categories and among family size groupings, there were no consistent relations between intelligence test

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scores and ordinal birth position. And Murray (16), who examined high school students in England, found that for each level of family size, with some control exercised over social status, there was no significant difference between first- and later born children on verbal and nonverbal intelligence tests.

However, Kellaghan and Macnamarra (12), in a study of 11-year-old Irish children found that, after accounting for the influence of family size and social status, ordinal position still made a significant contribution in accounting for variation in verbal reasoning scores. Also, Eysenck and Cookson (10), who investigated 4000 11-year-old English children discovered that for mathematics and English achievement tests, there was a significant trend for early born children to do better than later born children when family size was held constant, whereas after accounting for the influence of family size, there was no relation between ordinal birth position and intelligence or reading scores.

Because of the equivocal nature of the results from studies that have examined the relations between ordinal position, global indicators of the environment and cognitive performance, there is a need for research which investigates in greater detail the social-psychological correlates of both ordinal position and cognitive abilities (2, 3, 6, 10, 11). The type of research that is required is reflected in a study of American elementary schoolchildren (1), in which teachers were asked to rate the behavior of their students on eight school-related motivational dimensions. Although firstborn children scored significantly higher than later born children on measures of intellectual and academic performance, the differences were accounted for when the motivation scores were statistically controlled.

However, the social-psychological theoretical position which is usually proposed to link the constructs of ordinal position, environment, and intelligence postulates that parents provide different environmental experiences for children of different ordinal birth position and that these family-related environmental treatments account for the variation in the intellectual performance of children of differing ordinal position (2, 6, 7, 12, 19, 21, 22, 24). It is the relations between ordinal birth position, the psychosocial environment of the family, and mental abilities that are examined in the present study.

B. METHOD

1. *Subjects*

Approximately 500 11-year-old boys from 20 elementary schools in Southern Ontario, Canada, were tested first with the California Test of

Mental Maturity and then the SRA Primary Mental Abilities Test (1962, rev. ed.). The first test-taking situation was used to establish examiner-examinee rapport, ensure that all the boys were able to understand the test instructions, and establish as far as possible uniform test-taking situations. Only the scores from the SRA test were used in the study. The boys were assigned to two social class categories, one classified as middle class and the other as lower class. The social class classification was based on a standard weighted combination of the occupational status of the head of the household (4), and a rating of his (or her) education. As far as possible, two parallel pools of boys were formed. The purpose of the substitute pool was to provide a set of alternate families which could be used in the study if families from the first pool did not agree to participate.

The final sample consisted of 90 boys and their parents, classified as middle class, and 95 classified as lower class.

2. *Instrumentation*

The conceptual framework for the development of a family environment measure was adopted from Murray (17) and Bloom (5), who propose that the total environment which surrounds an individual may be defined as being composed of a complex network of environmental forces and that the development of each human characteristic is related to a subset of the total set of forces. Thus for the mental abilities it was proposed that a subset or a subenvironment of parent-sibling interaction variables could be identified which would be related to the abilities (13, 14).

From a review of relevant theoretical and empirical literature (8, 9, 18, 23, 25, 26) eight parent-sibling interaction variables were identified. These were labeled: press for achievement, press for activeness, press for intellectuality, press for independence, press for English, press for second language, mother dominance, and father dominance.

Each of the parent-sibling variables was defined by a set of characteristics which were assumed to be the behavioral manifestations of the variables. The characteristics provided the framework for the construction of a semistructured family interview schedule which was used to elicit responses from both mothers and fathers.

As well as obtaining a measure of the intensity of the present psychosocial environment of the family, the schedule attempted to gain a measure of the cumulative nature of the family environment. For example, as well as asking, "what kind of job would you like him to have when he grows up?" the schedule also included a question to estimate how long these expectations had been held (15).

For each item in the questionnaire, a set of six alternate responses was supplied to the interviewer. In addition, an "other answer" space was provided so that the interviewer could record a response that was not covered by those supplied. A six-point rating scale was developed in order to score each item in the schedule. The score for each of the environmental characteristics was obtained by summing the scores on the relevant environmental items, and the score for each of the environmental variables was obtained by summing the scores on the relevant environmental characteristics. In total, 188 six-point rating scales were constructed, and the interviews lasted for approximately two hours. A list of the parent-sibling interaction variables, their associated characteristics, and the internal-consistency reliabilities of the variables are presented in Table 1.

TABLE 1
PARENT-SIBLING VARIABLES, CHARACTERISTICS, AND RELIABILITIES

Parent-sibling variables	Characteristics	Alpha reliability
Press for achievement	Parental expectations for the education of the child, social press, parent's own aspirations, preparation and planning for child's educational progress, valuing educational accomplishments, parental interest in school.	.95
Press for activeness	Extent and content of indoor activities, extent and content of outdoor activities, extent and the purpose of the use of T.V. and other media.	.80
Press for intellectuality	Number of thought provoking activities engaged in by children, opportunities made available for thought provoking discussions and thinking, use of books, periodicals, and other literature.	.88
Press for independence	Freedom and encouragement to explore the environment, stress on early independence.	.71
Press for English	Language (English) use and reinforcement, opportunities available for use.	.93
Press for second language	Second language use and reinforcement, opportunities available for use of second language.	.90
Father dominance	Father's involvement in child's activities. Father's role in family decision making.	.67
Mother dominance	Mother's involvement in child's activities. Mother's role in family decision making.	.66

C. RESULTS AND DISCUSSION

In the analysis relations were examined between (a) ordinal position and mental abilities, (b) ordinal position and the environment measures, (c) the environment measures and the mental abilities, and (d) ordinal position, environment, and mental abilities. Because it is possible that the effect of ordinal position on mental abilities in middle-class families is different from that in lower-class families, the relations between ordinal position, family environment, and mental abilities were examined within the two social class groups, as well as for the total sample.

The first analysis (see Table 2) indicated that, in the total sample and in the two social class groups, ordinal position was significantly and negatively related to verbal and number ability scores. That is, earlier born children tended to have higher scores on these two abilities. Ordinal position was not related to reasoning and spatial abilities.

Of the parent-sibling interaction variables, only press for independence and mother dominance were not related to ordinal position, whereas the education of the mother was the only global environment measure which had a significant (negative) relationship. The pattern of correlations in the

TABLE 2
RELATIONS BETWEEN ORDINAL POSITION, MENTAL ABILITIES, AND
ENVIRONMENT VARIABLES

Variable	Relation with ordinal position		
	Total sample	Middle class	Lower class
Ability			
Verbal	.27**	.36**	.39**
Number	.26**	.38**	.37**
Spatial	.04	.12	.13
Reasoning	.04	.007	.01
Environment			
Press for achievement	.40**	.48**	.50**
Press for activeness	.26**	.27**	.30**
Press for intellectuality	.31**	.40**	.41**
Press for independence	.08	.08	.15
Press for English	.15**	.16	.22**
Press for second language	.22**	.22**	.25**
Mother dominance	+.04	+.05	+.04
Father dominance	.22**	.19*	.25**
Occupation of father	.12	.09	.09
Education of father	.11	.02	+.001
Education of mother	.26**	.29**	.33**

Note: Negative signs have been omitted.

* p is less than .05.

** p is less than .01.

two social class groups was very similar to the relationships in the total sample.

The relations between the abilities and the environment measures (see Table 3) indicated that, in general, for verbal and number abilities the parent-sibling variables had moderate to high concurrent validities and the global measures had moderate concurrent validities.

TABLE 3
RELATIONSHIP BETWEEN THE ENVIRONMENT AND VERBAL AND NUMBER ABILITIES

Environment variable	Ability	
	Verbal	Number
Press for achievement	.66**	.66**
Press for activeness	.52**	.41**
Press for intellectuality	.61**	.53**
Press for independence	.42**	.34**
Press for English	.50**	.27**
Press for second language	.35**	.24**
Mother dominance	.21**	.16*
Father dominance	.16*	.10
Occupation of father	.43**	.30**
Education of father	.29**	.27**
Education of mother	.39**	.33**

* p is less than .05.

** p is less than .01

Thus the first set of analyses indicated that ordinal position was related to verbal and number abilities and also related to a set of parent-sibling interaction variables which had moderate to high concurrent validities in relation to the abilities.

Multiple regression models were used to examine the extent to which the measures of the environment accounted for the ordinal position differences in the ability scores. When the three social status indicators and ordinal position were combined into a predictor set (see Table 4), it was found that ordinal position still made an independent contribution to the variance in the ability scores, after accounting for the influence of social status and the covariation of ordinal position and social status. That is, the social status differences between families did not account for the variation in the verbal and number ability scores of children of different birth order.

However, when the parent-sibling interaction variables and ordinal position were combined into a predictor set, the environment variables accounted for all the ordinal position effects on the verbal and number ability scores.

The results suggest that one explanation for the differences in the cogni-

TABLE 4
RELATIONS BETWEEN ORDINAL POSITION AND OTHER VARIABLES

RELATIONSHIP BETWEEN ORDINAL POSITION AND OTHER VARIABLES					
Ability	Predictor variables	Total sample	Middle class	Lower class	
<i>Social status variables</i>					
Verbal	Ordinal position	7.3**	12.96**	15.21**	
	A = ordinal position + 3 social status indicators	25.96**	29.09**	28.97**	
	B = 3 social status indicators	22.68**	23.40**	22.15**	
	C = A - B = ordinal position	3.28*	5.69**	6.82**	
		6.7**	14.44**	13.69**	
Number	Ordinal position	6.7**	14.44**	13.69**	
	A = ordinal position + 3 social status indicators	15.52**	19.73**	18.76**	
	B = 3 social status indicators	12.11**	11.95**	11.57**	
	C = A - B = ordinal position	3.41*	7.78**	7.19**	
<i>Parent-sibling variables</i>					
Verbal	Ordinal position	7.3**	12.96**	15.21**	
	A = ordinal position + 8 environment variables	51.8**	66.0**	59.36**	
	B = 8 environment variables	51.7**	66.0**	59.25**	
	C = A - B = ordinal position	0.1	Nil	0.11	
		6.7**	14.44**	13.69**	
Number	Ordinal position	6.7**	14.44**	13.69**	
	A = ordinal position + 8 environment variables	50.9**	58.91**	58.90**	
	B = 8 environment variables	50.9**	58.90**	58.87**	
	C = A - B = ordinal position	Nil	0.01	0.03	

* p is less than .05.

** p is less than .01.

tive performance of children of different ordinal birth position is related to variations in parent-child interaction. Thus the study provides support for the social-psychological theoretical position that families provide different environmental experiences for children of differing ordinal positions, and that the experiences are related to variation in intellectual performance.

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NECESSITY, CONTROL, AND PREDICTABILITY OF NOISE AS DETERMINANTS OF NOISE ANNOYANCE*¹

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SUMMARY

A survey was conducted to test hypotheses dealing with the relationship between the necessity, controllability, and predictability of noise and noise annoyance in five different noise environments. With the exception of noise on the job, the results obtained for the other noise environments indicated partial support for the hypotheses dealing with the necessity and controllability of noise and no support for the hypothesis dealing with the predictability of noise. The data showed a very low positive relationship between necessity and annoyance and between control and annoyance. Partial correlations indicated that necessity and control were independently correlated with annoyance.

A. INTRODUCTION

One of the more pervasive forms of urban stress is noise. To understand reactions to an urban stressor, such as noise, it is necessary to understand the cognitive situation in which the noise occurs. McKennell (7) found in a study conducted in England that cognitive factors regarding airplane noise were more important than the amount of exposure to airplane noise in determining variance in annoyance with airplane noise. In another study in Central London no correlation was found between level of exposure to noise and noise annoyance (8). To understand annoyance reactions to noise it does not appear adequate simply to examine the level of exposure to noise, but rather it is necessary to examine the cognitive variables that may affect the relationship between noise exposure and annoyance with noise.

One of the cognitive variables which survey research has found to be

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related to annoyance with noise is the necessity of noise (2). Borsky (1) in a study of reactions to sonic booms in Oklahoma City, Oklahoma, found that those persons who felt it was absolutely necessary that the United States build a supersonic airplane and those persons who felt that local sonic booms were necessary were less annoyed with airplane noise than those who felt that the supersonic airplane and local sonic booms were not necessary.

Laboratory investigations also indicate that cognitive factors have an effect on responses to noise. Glass, Singer, and Friedman (6) found that among college females adaptation to noise after termination of the noise was greater and tolerance higher among those exposed to predictable as compared to those exposed to unpredictable noise. Finkelman and Glass (4) found that for student volunteers unpredictable noise, in contrast to predictable noise, resulted in greater performance degradation on a subsidiary task. In another experiment (6) it was found for college females that the adverse effects of unpredictable noise were reduced if the subjects believed they could control the noise. Reim, Glass, and Singer (9) found with a sample of older male and female subjects that controllable noise produced less postadaptive performance impairment than uncontrollable noise, while the predictability of noise had only minimal effects on postadaptive performance. These laboratory investigations indicate that two variables to examine in understanding reactions to noise are the extent to which individuals feel they can control the noise they are exposed to, and the extent to which the noise they are exposed to is predictable.

Community surveys dealing with noise annoyance have not examined control or predictability as it may affect annoyance with noise. While laboratory studies of the effects of noise cover a limited time period and a specific noise stimulus, individuals in communities are exposed to a variety of noise over long periods of time. The question raised in this research regarding control and predictability is whether results obtained in a laboratory setting on postadaptive reactions to noise will also be found in a community study of annoyance reactions to different noise environments.

The hypotheses to be tested in this investigation are: (a) the more necessary an individual feels that noise is in a given noise environment the less annoyed he is with noise; (b) the more control an individual feels he has over the noise he is exposed to in a noise environment, the less annoyed he is with noise; and (c) the more predictable the noise in a noise environment, the less annoyed an individual is with noise.

B. METHOD

The survey was conducted in Hayward, California. The city, which is located in a major urban area, has about 100,000 residents and a range of noise sources including trains, freeways, and a flight path to a major airport. The data were gathered with a self-administered questionnaire which was distributed by fieldworkers.

The sample of households was obtained by drawing a random sample of block segments. The overall completion rate for the sample of 300 residents was sixty-seven percent, with 200 persons filling out the questionnaire. Fifteen percent of the sample refused to fill out the questionnaire and eighteen percent of the sample could not be seen after having received a copy of the questionnaire.

To measure noise annoyance subjects were asked how annoyed they were with noise (very, somewhat, not too, and not at all annoyed) in five different environments: neighborhood at night, neighborhood during the day, home, street, and job. In other surveys dealing with attitudes toward noise, the single item question as a measure of annoyance was found to be a very robust general factor (7).

Each of the three cognitive variables—necessity, control, and predictability—was measured for the five noise environments. The questions used to measure the cognitive variables for noise during the night, which were similar to the questions used for the other four situations, are listed below.

How necessary is the noise that you are exposed to in your neighborhood during the night? (four response options)

Do you feel that you have control over the amount of noise you are exposed to in your neighborhood during the night? (five response options)

Do you know when you will be exposed to noises that you hear in your neighborhood during the night? (five response options)

C. RESULTS

The distribution of responses to the annoyance questions indicates that there was a fairly high level of annoyance with noise. The percentage either very annoyed or somewhat annoyed with noise in each of the five areas was: 52% for noise in the streets, 43% for noise in the neighborhood during the night, 40% for noise on job, 29% for noise in the neighborhood during the day and 26% for noise in the home.

Pearson product moment correlations among the five questions dealing

with annoyance were all significant ($p < .01$) and ranged from .18 for the relationship between annoyance with noise in the home and noise on the job, to .53 for the relationship between noise on the street and noise in the neighborhood during the day. The more annoyed persons were with noise in one noise environment the more annoyed they were with noise in other noise environments.

Age, educational background, family income, and sex were not significantly related to measures of annoyance with noise. A lack of a relationship between demographic variables and annoyance with noise has also been found in other surveys dealing with noise annoyance (2, 3).

Table 1 shows the Pearson product moment correlations testing the

TABLE 1
RELATIONSHIP BETWEEN ANNOYANCE WITH NOISE AND THE NECESSITY, CONTROL,
AND PREDICTABILITY OF NOISE IN FIVE NOISE ENVIRONMENTS

Noise environment	Necessity	Control	Predictability
Neighborhood night	-.26**	-.13	.16*
Neighborhood day	-.17*	-.18*	.02
Home	-.13	-.19**	.02
Street	-.18**	-.12	.01
Job ^a	.51**	.58**	.55**

^a $N = 136$, for all other noise environments $N = 200$.

* $p < .05$.

** $p < .01$.

relationship between the cognitive variables and noise annoyance for each of the five noise environments. The correlations supported the first hypothesis at a low but significant level for the necessity of noise in the neighborhood during the night and day, and for noise on the street. The direction of the correlations for noise in the home supported the hypothesis, but failed to be significant at the ($p < .05$) level. There was a significant reversal in the direction of the correlation for noise on the job: i.e., the correlation indicated that the more necessary the noise was on the job the greater the annoyance.

The correlations supported the second hypothesis at a low but significant level for control over noise in the neighborhood during the day and for control over noise in the home. The correlations for neighborhood at night and noise on the street were in the hypothesized direction, but failed to achieve significance at the ($p < .05$) level. Once again there was a significant reversal in the direction of the correlation for noise on the job; the greater the control over noise on the job the greater the annoyance.

The third hypothesis, which dealt with the predictability of noise, was not supported by the data. For noise in the neighborhood during the night and noise on the job, the correlations were significant in the opposite direction. The more predictable noise was on the job and in the neighborhood during the night, the greater the annoyance with noise.

With the exception of noise on the job, the partial correlations (Pearsonian) between annoyance with noise and the three cognitive variables remained at a similar level when each of the other cognitive variables was controlled. The largest change in the partial correlations, as compared to the zero-order correlations, occurred for noise on the job. The partial correlations for noise on the job ranged from .22 for the relationship between necessity and annoyance controlling for the control over the noise environment, to .38 for the relationship between control and annoyance controlling for the necessity of noise. The fact that the magnitude of the partial correlations was similar to the zero-order correlations for the other noise environments suggests that the cognitive variables had an independent influence on annoyance with noise.

D. DISCUSSION

The results of this study indicated that, with the exception of noise on the job, there was some support at a low but significant level for the hypotheses dealing with necessity and control over the noise environment, and no support for the hypothesis dealing with the predictability of noise. The reversal in the direction of the correlations obtained for noise on the job suggests that the relationship between cognitive variables and noise annoyance is dependent on the noise environment being considered. The more necessary, the more controllable and the more predictable the noise on the job, the greater the noise annoyance. One possible explanation for these results, which could not be examined with these data, is that those persons who had jobs which involved a high degree of noise also felt that the noise on their job was predictable, necessary, and controllable.

One of the questions raised in this research was whether laboratory findings on the effects of predictability and control would also be found in a community survey of different noise environments. The major limitation involved in comparing this study and previous laboratory investigations is that laboratory research involves reactions to a specific stimulus over a relatively brief time period and the community survey, such as the one reported here, examines general reactions to noise situations over a longer time period. Thus the laboratory experiment and the community survey

are not examining the same stimulus situation. Nevertheless, the survey can be used to determine whether findings obtained in a laboratory situation for brief exposure to noise would also be found in a study of long term exposure to a noise environment. The fact that predictability was not related to noise annoyance in the hypothesized direction, and the fact that for two of the five noise environments the correlations were in the opposite direction, suggests that further research be conducted to determine the limitations which should be placed on the external validity of laboratory findings on the effect of predictability on reactions to noise.

For noise in the neighborhood during the day and night, noise on the streets, and noise in the home, necessity and control were found through partial correlation analysis to be independently correlated in the hypothesized direction with noise annoyance. The necessity of noise has not been considered in laboratory investigations dealing with postadaptive reactions to noise. Since both control and necessity were independently related to annoyance, this suggests that future laboratory studies consider the necessity of noise as a cognitive variable which determines reactions to noise.

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PROJECTION EFFECTS AND THE NEEDS-PRESS MODEL*

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SUMMARY

A study was conducted of the relationships between pupil needs, environmental press, and pupil attitudes to various aspects of a high school physics course. The use of data derived from Ss to yield measures of both needs and press assumes that these measures are independent: i.e., that projection does not play a significant role in determining Ss' responses to press items. The technique used by Stern to investigate projection effects is criticized, and an alternative procedure, employing within-class correlations, is proposed.

A. INTRODUCTION

A considerable body of research on the behavior of individuals in social situations has been guided by the needs-press model of Murray (6). This model, which arose out of the field theory of Lewin (3), regards a person's behavior as the outcome of an interaction between his needs and the press which act upon him. Needs are motivational, representing tendencies to move in the direction of certain goals. Press are directional tendencies in the person's environment which relate to these needs. According to the model, for each kind of need, there is a corresponding press. Need for achievement, for example, would be encouraged and satisfied in an environment which stresses success, high quality work, and competition; deference would be rewarded in a situation which is authoritarian and compliance demanding, and so on.

Needs are usually measured by administration of self-report questionnaires to the Ss being studied. Various techniques have been used to measure press. One technique involves gathering the judgements of disinterested trained observers; Murray (6) labels this relatively objective measure *alpha* press. An alternative technique is to obtain data from the Ss

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themselves; their own experiences, reflecting their own perceptions of their social environment, provide measures of *beta* press. Beta press may or may not correspond to alpha press. Stern (9, p. 7) makes a further distinction between *consensual* beta press (the shared perceptions of the participants in a social situation) and *private* beta press (the highly idiosyncratic view of individuals within that situation.)

Stern (7, 9) has made extensive use of data obtained from Ss in order to describe needs and beta press in a variety of institutional settings. He has developed a set of 30 needs scales (the *Activities Index* or AI) and a number of different sets of scales measuring press. One problem, which Stern recognizes, is that if personality and environmental variables are to be validly measured by means of instruments filled in by Ss, it is necessary to ensure that the variables are truly distinct and that one measuring instrument does not contaminate the other.

Suppose that students with a high need for achievement described their teacher as achievement oriented, and students with a low need for achievement perceived him as low in such orientation. Need for achievement would then be highly correlated with measures of achievement press. If this process occurred, it would raise doubts concerning the validity of the technique of asking students to report on the characteristics of their teachers. In psychological terms, such a phenomenon is identified as *projection*.

Stern (9, p. 31) examines the possibility of projection operating among the students in his sample; if projection were operating, responses to the College Characteristics Index (a set of measures of environmental press) might reflect students' own needs rather than objectively describe their surroundings. Stern cites two studies by McFee (4, 5) which correlated scores on the Activities Index scales with the corresponding CCI scales; the sample comprised 100 students in one institution. The correlations were consistently close to zero. Stern points out, however, that students within a single institution might display a restricted range of need scores, and this would automatically make the correlation small. He therefore argues that an investigation of whether projection is operating requires a larger sample of students from a wide range of institutions. Citing earlier work (8, pp. 48-49), in which 1076 students in 23 colleges were sampled, and the intercorrelations between AI and CCI scores were found, he reports that the average magnitude of the correlation was .08, with a maximum value of .34 (between need for Science and Science press, which he does not regard as being due to projection). Most of the correlations, however, are

low, and Stern infers that "there is no evidence that the mechanism of projection plays any significant role in determining responses to the CCI" (9, p. 34).

The purpose of the present paper is to criticize the reasoning that Stern uses to arrive at this conclusion, with the use of data obtained in a project undertaken by the writer (1).

B. METHOD

The project involved a study of the effects of needs and press upon the attitudes of Victorian high school physics students taking a course based on the Physical Science Study Committee (PSSC). Four Likert-type attitude scales were developed: Views about Physics Learning (Discovery/Authoritarian), Views about Physics as a Process (Open/Closed), Views about Scientists (Eccentric/Normal), and Enjoyment of Physics (Antipathy/Commitment). These scales reflect attitudinal objectives claimed to be important by the writers of the PSSC course. The scales were administered to pupils in coeducational high schools in above-median socioeconomic status regions of the Melbourne metropolitan area at the beginning and end of the Grade 11 year.

It was hypothesized that pupils' attitudes would be related to various personality characteristics ("needs") and to various aspects of their classroom environment ("press"). Needs were measured by means of eight scales taken from Stern's *Activities Index*. The scales, and their corrected split-half reliabilities were: 1. Achievement (.82), 2. Conjunctivity (.81), 3. Deference (.71), 4. Play (.85), 5. Understanding (.82), 6. Order (.84), 7. Nurturance (.89), 8. Energy (.57). The split-half reliabilities, before correction, have substantially the same values as the Kuder-Richardson 20 reliabilities reported by Stern (9). A sample item in the need for Achievement scale was "Setting difficult goals for myself (Like/Dislike)." There were 10 such items per scale.

Scales measuring the classroom press corresponding to these needs were developed especially for the project. These were similar in form to Stern's various press scales, but many of the items referred to situations peculiar to the physics classroom. For example, one item on the press for Order scale was "Apparatus is frequently left lying around the laboratory for some time (Strongly Agree/Agree/Disagree/Strongly Disagree/Not Sure)." Items for the final forms of the scales were selected from a larger pool that had survived an initial judging phase and an initial trial on a sample of university physics students shortly after their entry into university. The final forms of

the eight press scales each contained 10 items. The corrected split-half reliabilities of the scales were, in order, .67, .91, .72, .78, .86, .76, .89, and .89.

The needs and press scales were administered successively within the one class period by a research assistant, in the absence of the class teacher, during the middle of the Grade 11 year. A total of 1014 students, in 58 classes in 34 schools, provided data on all the scales used in the project.

The mean score of all the pupils in a class on a press scale provides a measure of consensual beta press. If consensual press is largely determined by the behavior of the teacher, and if the teacher's behavior is stable across classes, then two classes with the same teacher ought to agree in their estimation of the press. In 18 schools in the sample, one teacher taught two different classes; a rough index of the stability of the press scales can be obtained by calculating, for each press scale, the correlations between the mean scores of one set of 18 classes, and the mean scores of the other set of 18 classes. The product-moment correlations for the eight press scales were, in order, .81, .87, .84, .81, .78, .96, .83, and .78. This indicates a high level of agreement between classes and suggests that the scales are stable, as well as internally consistent.

C. RESULTS AND DISCUSSION¹

Product-moment correlations between needs and press scores were found, with the use of the pooled data of all 1014 Ss. The highest correlation between a need scale and its corresponding press was .13 (between *n* Conjunctivity and its press—the correlation between *n* Order and its press was also .13). This value is even smaller than the maximum value found by Stern. Thus, the contention that there is no strong tendency for students to project their own personal attitudes onto their classroom environment would seem to be even more strongly supported by the writer's own data.

This conclusion, however, might be faulty, because Stern's technique of calculating correlations among individual scores, using the total sample, is open to question. It is conceivable (though not likely) that there might be a strong correlation between students' scores on a personality scale and scores on a classroom environment scale *within classes*, but differences in the class mean classroom environment scores *between classes*. This possibility is depicted in Figure 1.

¹ The project yielded many findings on the changes in Ss' attitudes during the year, and the relationships among initial attitudes, final attitudes, needs, and press. The findings and discussion reported here are restricted to those that relate to projection effects.

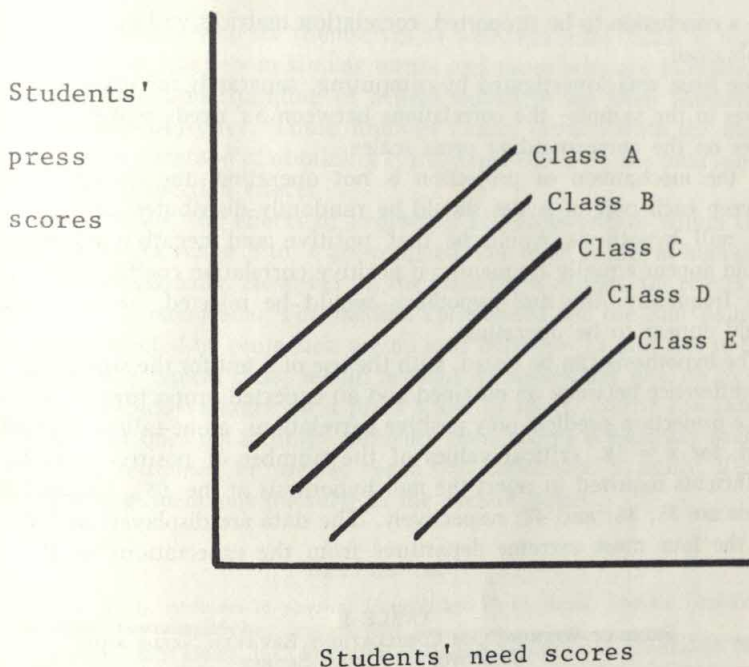


FIGURE 1
HYPOTHETICAL RELATIONSHIP BETWEEN NEEDS AND PRESS SCORES

Such a situation could arise if there were "real" differences in press between classes, with differences in perception within classes entirely due to projection. In other words, each *S*'s press score could be regarded as a linear combination of a consensual press component and a private press component, the latter component being due to projection. Then, within classes, there would be a high correlation between personality score and classroom environment score. However, if the students' scores are pooled, the plotted points would be evenly scattered over the whole quadrant, and the correlation would tend towards zero.

Stern's results and those of the present research, therefore, certainly suggest that there is no widespread tendency to rate the classroom environment *entirely* on the basis of personality and independently of reality; however, they do not warrant the conclusion that projection plays no significant role in determining responses to the environmental index. For

such a conclusion to be supported, correlation matrices within classes must be obtained.

The issue was investigated by computing, separately for each of the 58 classes in the sample, the correlations between Ss' needs scores and their scores on the corresponding press scales.

If the mechanism of projection is not operating, the 58 correlations between each pair of scales should be randomly distributed around zero. The null hypothesis would be that positive and negative correlations should appear equally frequently: if positive correlation coefficients appear very frequently, the null hypothesis would be rejected, and projection would appear to be operating.

The hypothesis can be tested, with the use of a test for the significance of the difference between an obtained and an expected proportion (2, p. 323). Since projection predicts only positive correlations, a one-tailed test can be used; for $n = 58$, critical values of the number of positive correlation coefficients required to reject the null hypothesis at the .05, .01, and .001 levels are 35, 38, and 41, respectively. The data are displayed in Table 1; for the four most extreme departures from the expectations of the null

TABLE 1
SIGNS OF WITHIN-CLASS CORRELATIONS BETWEEN NEEDS AND
CORRESPONDING PRESS SCORES

Scale	Frequency of positive correlations ^a
1. Achievement	33
2. Conjunctivity	41*** (.18) ^b
3. Deference	32
4. Play	34
5. Understanding	40** (.14)
6. Order	45*** (.16)
7. Nurturance	40** (.11)
8. Energy	36*

^a $n = 58$.

^b Figures in parentheses are median values of the 58 correlation coefficients.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

hypothesis, the median values of the correlation are also shown. Clearly, the null hypothesis must be rejected: there is a significant and persistent tendency towards projection within classes. Pupils who are compulsively orderly (Scale 6) tended to rate their teacher higher on the corresponding press scale; nurturant pupils (Scale 7) perceived their teachers as more

nurturant; students who see themselves as well-organized (Scale 2) tended to describe their teachers in similar terms; and those who are interested in developing their understanding of a field tended to see their teachers as promoting this objective. These findings clearly demonstrate the inadequacy of Stern's method of obtaining correlations based on the total sample for detecting projection effects.

In some classes, the effects of projection are pronounced: within class correlations in the range .3 to .4 are common, and even values as high as .5 or .6 occur occasionally. However, in the majority of classes, the effects are fairly weak in magnitude. The median correlations for the four pairs of scales most affected by projection are all low, between .11 and .18, so that projection, in a typical class, would account for something like 1% to 4% of the within-class variance on a press scale. In short, Stern's *conclusion* that projection does not strongly influence press scores is basically sound, although the *reasoning* he uses to reach that conclusion is faulty, if one accepts the argument put forward in the present paper.

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EFFECTS OF FALSE FEEDBACK ABOUT RESPONSE LENGTHS ON SUBJECTS' PERCEPTION OF AN INTERVIEW*

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SUMMARY

Sixty-four female freshmen were interviewed about various attitudes toward their college. Halfway through the interview, three groups of subjects were told falsely by the experimenter that their responses to the questions had been significantly longer than average, of about average length, or significantly shorter than average. A fourth group of subjects was given no false feedback. Subjects with longer than average false feedback increased their response lengths significantly during the last half of the interview and rated the interview questions significantly more favorably than other subjects. Subjects with shorter than average false feedback also gave significantly longer responses during the second half of the interview, but did not differ from average false feedback and no feedback subjects in their favorability toward the interview questions. Results of the study were discussed in terms of Bem's self-perception theory.

A. INTRODUCTION

Bem's theory (2, 3, 4, 5) that attitudes are a function rather than a cause of behavior suggests that a person's attitudes can be changed by changing his behavior or his perceptions of his behavior. This approach toward attitude change should be successful so long as the person discriminates the behavior in question and attributes the behavior to himself rather than to outside forces.

Cognitive dissonance studies support Bem's theory by showing that subjects will change their attitudes when they are induced to perform a

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behavior for low apparent payoff. The crucial point in these studies is that although subjects follow the requests of an experimenter, they are led to believe that they are acting out of their own volition (8, p. 227). Bem's (2, 3) outside observer studies [see also Hastorf *et al.* (7)] show that behaviors affect attitudes because observers of subjects' behavior will attribute the same attitudes to the subjects that the subjects attribute to themselves. Another approach toward demonstrating attitudes as a function of behavior has been to alter subjects' behaviors by means of reinforcement control and to measure the effects of this treatment on their subsequent attitudes (1, 6, 10). Studies using false behavioral feedback have also been successful in showing that subjects will change their attitudes when they are led to believe that they behaved in a certain manner. A number of experiments using false feedback have been reviewed by Nisbett and Valins (12). Kleinke *et al.* (11) gave male and female couples false feedback about the amount of gaze they had in an interaction. Kleinke *et al.* (9) gave false feedback to female subjects about how long they had chosen to look at various paintings.

The present experiment was designed to test Bem's theory in an interview situation in which female interviewees were told that their responses to the interview questions were significantly longer than average, of about average length, or significantly shorter than average. It was predicted that subjects who thought their answers were significantly longer than average would be most favorable toward the interview and subjects who thought their answers were significantly shorter than average would be least favorable toward the interview.

B. METHOD

1. *Subjects and Experimenters*

Forty-eight freshmen females were recruited at Wheaton College to be interviewed about their attitudes toward college. It was explained that members of the social psychology course were conducting a survey to find out how new students felt about various aspects of Wheaton College life, such as academic courses, social life, and the issue of coeducation. Subjects were told, in addition, that the students conducting the survey were interested in learning more about the interview method and that after the interview they would be asked to give their impressions of the interview and the interviewer on a brief anonymous questionnaire. Four female students conducted the interview in teams of two. Each interviewed 12 subjects and served as experimenter for 12 subjects. The interviewers were

always blind to the false feedback condition in effect. After the original experiment had been concluded it was decided that a no feedback control group would be of value. Sixteen additional freshmen females were recruited and interviewed by two different interviewers. In this condition, the experimenter interrupted the interview half way through to give the participants a chance to ask any questions they might have up to this point in the study. Approximately as much time was taken here as in the false feedback treatments, but no mention of recording of response lengths was made.

2. *Procedure*

The subject and interviewer were seated across the corner of a 3×5 foot table in a 9×12 foot interview room. When half of the interview had been completed, the experimenter returned and asked the subject if she would come with her into a adjoining room for a moment. The experimenter then explained that she had been monitoring the first half of the interview through a pair of headphones and had recorded the length of the subject's answers with a cumulative clock. The subject was shown how the intercom system and clock operated and was told, matter of factly, that compared with other participants in this and similar interviews her responses to the questions had been significantly longer than average, of about average length, or significantly shorter than average. If the subject's answers had ostensibly been longer or shorter than average, the experimenter pointed out on a diagram of a normal curve that her response lengths fit into a fairly small portion of the general population. Subjects with average false feedback saw on the normal curve that their response lengths fit into the majority of the population of previous interview participants. After the false feedback instructions, the subject returned to complete the second half of the interview with the belief that the experimenter had finished monitoring her response lengths. When the interview was completed, the experimenter excused the interviewer, gave the subject a brief questionnaire, and asked her to be frank in her responses, as the questionnaire was anonymous. Each experimental session lasted 20 minutes. All subjects were interviewed briefly after the experiment and given the full results of the experiment when it had been completed.

3. *Dependent Measures*

a. *Length of responses.* The experimenter recorded the cumulative lengths of subjects' responses to the first and second halves of the inter-

view. A post minus pre difference score was taken to measure the relative change in amount of subject talking for each of the treatment groups.

b. Questionnaire. Subjects were asked to respond to two polar items on a 12-point scale: "I liked the interviewer very much—I did not like the interviewer at all" and "The interview questions were interesting and relevant to me—The interview questions were boring and irrelevant to me." The items on the left were scored one and the items on the right were scored 12.

C. RESULTS

Inspection of data revealed that subjects' response lengths and answers to the second item on the questionnaire did not vary significantly from one interviewer or experimenter to another. In addition, the data from each interviewer revealed no practice effect. It therefore seemed reasonable to include the no feedback group and the false feedback groups in the same analyses for these measures.

There were 16 subjects in each condition. All subjects spoke more during the second half of the interview, either because they were more involved or because the last half of the interview required longer responses. The critical finding is that the increase in talking for subjects with no false feedback ($\bar{X} = 5.1$ second) and average false feedback ($\bar{X} = 7.6$ sec.) was significantly less than the increase in talking for subjects with longer than average ($\bar{X} = 35.1$ second) and shorter than average ($\bar{X} = 29.8$ second) false feedback ($F = 3.74$, $df = 3/60$, $p < .05$). The first two groups and last two groups did not differ significantly from each other. Subjects receiving longer false feedback rated the interview questions as significantly more interesting and relevant ($\bar{X} = 3.41$) than subjects receiving shorter ($\bar{X} = 4.76$), average ($\bar{X} = 5.51$), or no false feedback ($\bar{X} = 5.13$; $F = 4.64$, $df = 3/60$, $p < .02$). The latter three groups did not differ significantly from each other. Subjects' ratings of liking for the interviewer varied across interviewers, but were not affected by the false feedback treatments.

D. DISCUSSION

Subjects' reactions toward the interview were clearly affected by their perceptions of how long their answers had been. Subjects who thought their answers were longer than average increased their response lengths during the second half of the interview and rated the interview as significantly more interesting and relevant than other subjects. Subjects

who thought their answers were shorter than average also increased their response lengths, but did not differ from control subjects on how they ultimately rated the interview.

As in other studies manipulating subjects' perceptions of their behaviors with false feedback (9, 11, 13), it is difficult to infer an independent "meaning" for these perceptions. In Bem's (5, p. 6) view, the meaning in the situation *is* the perceived behavior and the circumstances under which it occurs. Psychologists do often attempt to add more information than a strict functional analysis would call for (5, p. 55) by questioning subjects after an experiment. Valins (13), for example, gives anecdotal data about his subjects' verbal reactions to their perceived changes in heart-rate. Subjects in the present experiment stated that the feedback about their response lengths appeared reasonable and credible, but they were not able to specify in a quantifiable manner how they had interpreted it. Most commonly, subjects said that their response lengths seemed to have some relationship to how much they were engrossed or involved in the interview. The experimenters had taken special care not to take on an evaluative tone when giving the false feedback and subjects reported that they did not feel pressure to make a special impression because the experimenters and interviewers were their peers.

In the present experiment the false feedback treatment affected subjects' response lengths, as well as their ratings on the questionnaire. The increase in response lengths for experimental subjects can best be interpreted as an attempt by subjects to test their reactions toward the false feedback (12, p. 12). The questionnaire provided a measure of the outcome of this test. Kleinke *et al.* (9) gave subjects false feedback about how long they had chosen to look at slides of paintings and found that attitude change occurred only after the subjects had a chance to view the slides for a second time. The present study and Kleinke *et al.* (9) measured possible changes in subjects' behaviors after false feedback was given. Kleinke *et al.* (11) and Valins (13) did not measure overt behaviors after giving false feedback. It will be of value to isolate the processes and sequences of (a) attribution, (b) behavior change, and (c) attitude change (5, p. 50).

The use of false behavioral feedback satisfies two of Bem's requirements for attitude change because the behavior in question is made very salient to the subject and appears intrinsically attributable to inner rather than outer causes. Another requirement for successful attitude change by means of false feedback is that the feedback is believable to the subject. It would seemingly be more difficult to change a subject's attitudes by giving false

feedback regarding an easily discriminable behavior than a behavior about which the subject is less aware.

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EFFECTS OF GENDER AND RACE ON SEX-ROLE PREFERENCES OF FIFTH-GRADE CHILDREN*

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SUMMARY

Twenty-nine white and 14 black fifth-grade American students categorized 15 words as either masculine or feminine items. The subjects then rated the degree to which they liked each item. Results showed that girls significantly preferred items associated with their own sex, whereas boys were more ambiguous in their choices. Furthermore, girls assigned significantly more value to feminine items than boys assigned to masculine items and significantly less value to masculine items than boys assigned to feminine items. No significant effect due to race was found.

A. INTRODUCTION

Much speculation, theory, and research have focused on sex-role development in children. Related to this issue is the investigation of variables deemed to be important in the development of sex-role preferences. Sex-role preference is here being defined as the tendency of an individual to value a behavior, attitude, or object that the individual has associated with one gender or the other.

Considerable controversy exists concerning sex-role preference development. Some theorists emphasize the importance of cognitive processes. Kohlberg (6), for example, views consistency motivation as the crux of such development. He hypothesizes that once a child has categorized himself as male or female, the child then values positively whatever is consistent with his gender identity. This viewpoint has received support from Emmerich (2) who found that children assign a helping role to members of their own sex and an interfering role to members of the opposite sex.

In contrast to Kohlberg's theory, Brown (1) contends that the male role is

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more highly valued than the female role in our culture. Since children learn the stereotypes about masculinity and femininity early during the course of socialization (7), both boys and girls display greater affection for masculine objects and activities than for feminine objects and activities. Support for this hypothesis is provided by Sutton-Smith, Rosenberg, and Morgan (9) who reported that in grades three through six girls showed more interest in characteristically male activities than boys showed in characteristically female activities.

In addition to the influence of gender, the effect of social class on sex-role preference has been investigated. Rabban (8) found that lower-class children of both sexes tended to choose sex appropriate items more often than did middle-class children. Similarly, Hall and Keith (3) reported that lower-class boys exhibited more clearly masculine sex-role preferences than did upper-class boys. While much research has concerned itself with social class differences, the question of racial differences in sex-role preference formation has been relatively ignored.

In view of the differences in opinion that exist, this study attempted to determine whether children prefer items they associated with their own sex, as Kohlberg asserts, or whether children prefer items they associate with the male role, as Brown argues. In addition, an effort was made to discover whether race is an important variable in the development of sex-role preferences.

B. METHOD

1. *Subjects*

Forty-three fifth-grade students in Central Ohio served as subjects. These included 29 white children (16 males and 13 females) who attended a middle-class parochial school and 14 black children (seven males and seven females) who attended a lower-class public school.

2. *Procedure*

The subjects completed two paper and pencil tasks. The first task consisted of indicating for each of 15 words whether it was a "boy-type word" or a "girl-type word." The following words were used: bear, bird, blackboard, book, bunny-rabbit, desk, eraser, lamb, lion, map, pencil, ruler, school, shark, and wolf.

The second task required the subjects to rate on a five-point scale the degree to which they liked each of the 15 items. Ample time was taken to

explain the rating scale so as to assure that each subject would understand the task.

C. RESULTS

The means of ratings accorded words categorized as masculine by white males, white females, black males, and black females were, respectively, 3.78, 2.76, 3.73, and 3.32. The means of ratings accorded words categorized as feminine by the four groups were, respectively, 3.80, 4.32, 3.60, and 4.31. No significant differences in the rating of items, as determined by *t* tests, can be attributed to race. The confounding of race with social class and type of school attended would have made interpretation of positive results difficult. Because of the structure of the local school system, it was necessary to accept this confounding in order to obtain both black and white subjects.

Girls gave higher ratings to items they had categorized as female than to items they had categorized as male ($p < .05$). No such preference for items consistent with the child's gender identity was found among boys.

The results also show that girls rated female-categorized items higher than boys rated male-categorized items ($p < .05$). In addition, girls rated male-categorized items lower than boys rated female-categorized items ($p < .05$). In other words, girls liked girl-things better than boys liked boy-things, and girls disliked boy-things more than boys disliked girl-things. Among these fifth-grade children, sexual chauvinism apparently is an attribute of the female sex and not the male sex.

Previous research (4) suggests that the school situation is viewed as more feminine than masculine and that school objects are more likely to be labeled feminine than masculine. In an attempt to replicate Kagan's results, chi square tests were computed for each of the eight classroom objects in the list of 15 words. Results showed that both boys and girls viewed "school" as a feminine item and "desk" as a masculine item ($p < .05$). In addition, girls were found to label "book" and "pencil" as feminine and "blackboard" and "map" as masculine ($p < .05$).

D. DISCUSSION

The primary purpose of this study was to provide support for either Kohlberg's hypothesis that American children value those items they associate with their own sex or Brown's hypothesis that children value those items they associate with masculinity.

Contrary to both viewpoints, boys did not rate items they associated with their own gender higher than items they associated with the female gender. Girls, however, were found to rate feminine items more favorably than masculine items. This latter finding would appear to be opposed to Brown and in support of Kohlberg.

Koch (5), however, reported that grade-school girls displayed greater preference for peers of their own sex than boys exhibited for peers of their own sex. She accounted for this by assuming a defense mechanism of compensation. Because our society grants greater freedom and status to the male role, girls perceive themselves as physically and socially inferior. In an attempt to compensate for these feelings, girls defensively proclaim a strong preference for items related to their own sex. Thus, while it might appear that girls deem their own sex-role as the more favorable, they actually perceive the male-role as being preferable. Therefore, while it is evident that girls rate feminine items preferable to masculine items, it cannot be determined if this phenomenon stems from a self-image of inferiority or superiority. In short, from the data now available it would seem premature to reject either Kohlberg's or Brown's hypothesis and embrace the other.

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"NEGATIVITY BIAS" IN EVALUATIVE RATINGS*

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SUMMARY

Previous research on extreme response style and rating consistency led to the hypothesis that American college women frequently experience a greater range of positive affect than men. This was tested by requiring subjects to choose either a positive or negative trait, matched for polarity, as being more neutral. Contrary to the hypothesis, both sexes consistently chose positive traits. The results supported the concept of a "negativity bias": viz., that negative traits have more impact than positive traits that are matched for extremeness. This negativity bias was further supported by a second study in which subjects reported greater differences in evaluation between negative traits than between positive ones. The amount of difference increased with greater degrees of polarization of the traits being judged. The results were interpreted as indicating that the negative half of bipolar scales covers a greater range of differences in evaluation than does the positive half of such scales.

A. INTRODUCTION

A number of investigators (e.g., 2, 4, 7) have observed that American college women tend to use extreme categories of rating scales more frequently than do men. Recent research by the present investigator (5) indicated that this sex difference in extreme response style is especially apt to occur when rating positive stimuli. Several studies found that women consistently made more extreme positive ratings than men, though this did not occur with regard to negative ratings of the same sets of stimuli (heterogeneous lists of words, trait-descriptive adjectives, and CVC tri-grams).

In attempting to account for the above results, it was hypothesized that women might experience more intense positive feelings about relatively

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mild stimuli than do men. If so, then women should require a broader scale, or more positive scale values, in order to reflect these feelings adequately. Because of this greater range, women's positive affective continua, as represented by rating scales, would be more differentiated than men's. As a means of testing this notion, comparisons were made of the relative reliabilities of positive and negative ratings for both men and women. It was expected that women would be more reliable or consistent than men with regard to positive ratings but not with negative ratings. In line with the hypothesis, women were more consistent than men in their positive ratings of CVC trigrams and Rorschach inkblots, but not in their negative ratings. It was also found that women were more consistent than men in a paired-comparison task involving desirable trait names. The sexes did not differ in consistency when they judged undesirable traits.

Although other interpretations of the sex difference in consistency are possible, the results were considered supportive of the idea of a greater range and differentiation of positive affective responses in women than in men.

The first study reported here was designed to be a further, more direct test of the proposed sex difference in reactivity to positive stimuli. Briefly, subjects were asked to choose the more nearly neutral of the two traits in each of a series of pairs. Each pair consisted of a positive and a negative trait-descriptive adjective, with both being equally polarized from neutral according to previous ratings. If there is merit to the proposition that the use of bipolar, symmetrical rating scales underestimates the range of positive affect frequently experienced by women, then we could expect women to choose positive traits as being more neutral than negative ones less often than men.

There is also a different theoretical line of approach to the present research: studies of impression formation, attribution processes, and risk-taking, yield evidence for what Kanouse and Hanson (8) have called a "negativity bias." This bias refers to the finding, in a variety of situations, that negative or undesirable events seem to have more impact and influence than equally polarized positive events. Contrary to the above hypothesis concerning sex differences, the concept of negativity bias would seem to imply that most people, regardless of sex, would choose positive traits as being more neutral than negative traits which have been matched for polarity as measured by traditional rating procedures.

B. STUDY I—POSITIVE AND NEGATIVE TRAIT RANGES

1. *Method*

a. Subjects. There were two replications of the investigation, each one involving different samples of subjects and stimuli. There were 35 male and 18 female undergraduates in the first replication; 32 male and 26 female students participated in the second.

b. Stimuli. Each replication involved nine pairs of trait-descriptive adjectives. The adjectives were selected from Anderson's (3) list. Each pair contained a desirable or likable trait and an equally polarized undesirable trait. In having his subjects rate the likableness of the traits, Anderson used a seven-point scale, ranging from 0 ("least favorable or desirable") to 6 ("most favorable or desirable"). The mean ratings of the desirable and undesirable traits used here were 5.03 and .98, respectively. The mean polarities, or differences from a neutral rating of 3, for the two classes of traits were 2.03 for positive traits and 2.02 for negative traits.

c. Procedure. Subjects were presented with one pair of traits at a time. They were asked to record the number of the trait which they felt was more nearly neutral or less extreme with regard to its desirability or undesirability. The order of positive and negative traits was randomized across the list of nine pairs.

2. *Results*

In the first replication, the mean choices of positive and negative traits were 8.00 and 1.00 ($t = 20.06$, $df = 52$, $p < .001$). Contrary to the hypothesis there was no indication of a sex difference. Mean choices of positive traits were 8.11 for women and 7.94 for men. The second replication yielded similar, though less extreme, results. The mean choice of positive traits was 5.62, while the mean for negative traits was 3.38 ($t = 5.10$, $df = 57$, $p < .001$). Men and women showed nearly identical behavior, their mean choices of positive traits being 5.63 and 5.62.

The results provide no support for the idea that the women subjects have a broader range of affective reactions to mild (compared to "real life") forms of positive stimuli. However, there is strong support for a negativity bias. In both replications the negative traits were perceived as being significantly less neutral than the positive traits.

The negativity bias is also clearly revealed by analyzing the results somewhat differently. The data from the two replications were combined.

There were 15 pairs in which the positive trait was more frequently chosen for relative neutrality. Among these pairs the proportion of subjects choosing the positive trait ranged from .67 to .98. Each pair was analyzed by means of chi square; all were significant at the .01 level, with 12 being significant at the .001 level. Of the three pairs where negative traits were more often chosen, only one yielded significance ($p < .001$).

In spite of the fact that both replications showed strong negativity effects, the size of the effect was significantly smaller in the second replication. As noted above, the mean choices of positive traits, out of nine pairs, were 8.00 in the first replication and 5.62 in the second ($t = 8.38$, $df = 109$, $p < .001$). In searching about for some explanation of this unexpected difference, it was discovered that there was some inadvertent bias in the selection of the stimulus pairs. The overall average polarity of good and bad traits was higher (2.17) in the first group than in the second (1.88). Although the difference may seem small, there was very little overlapping in the polarities of the two sets of traits, and the difference in polarity was significant ($t = 3.32$, $df = 34$, $p < .005$).

Unless there was some other, undetected, bias in either subject or stimulus selection, a comparison of the two replications seems to suggest, quite serendipitously, that the size of the negativity effect is positively correlated with the degree of polarization of the stimuli. This interpretation seems consistent with Feldman's (6) finding that the modifying capacity of adjectives is negatively correlated ($-.69$) with positivity of evaluation: i.e., the more negative the adjective the greater its effect. In the present case, negative traits had more impact than positive, and this was especially so when both kinds of traits were more extreme. This conclusion must remain tentative however, since the comparison between the two replications involved only a small range of polarity.

C. STUDY II—POSITIVE AND NEGATIVE TRAIT DIFFERENTIATION

The negativity bias found in the first study seems to imply that people may be relying upon two frames of reference, rather than just one, in using bipolar rating scales. One frame of reference is used in rating the relative desirability of positive traits (or other events), whereas a different set of standards, not directly comparable to the first, may apply to undesirable traits. The lack of comparability is revealed when positive and negative items are directly compared for polarity or impact value.

The present study was designed to test further the idea that the negative half of a bipolar scale covers more psychological "territory," or differences

in evaluation, than the positive half of the scale. This was done by asking subjects to rate the amount of difference in desirability between paired traits. If negative ratings have to be compressed in order to fit into the same amount of space on the scale as positive ratings, it could be hypothesized that people will perceive greater differences in evaluation among undesirable than among desirable traits.

Whereas degree of polarization was varied only accidentally and to a small degree between the two groups in the first study, it was systematically varied across a broad range of evaluation in the present case. The second hypothesis was that the amount of difference in evaluative differentiation among negative traits, compared to positive, would increase with the degree of polarization of both kinds of traits: the perceived difference between two somewhat bad traits would be greater than the perceived difference between two somewhat good traits, and this effect would be stronger for extremely bad vis-à-vis extremely good traits.

Although the first study yielded no evidence for a sex difference in negativity bias, the previous research (5) on sex differences in extreme response style and consistency of positive and negative ratings suggests a third hypothesis, that the negativity bias should either be absent in women, or at least smaller than in men.

1. *Method*

a. Subjects. Thirty-seven male and 37 female undergraduates participated.

b. Stimuli. Normative data provided by Anderson (3) were used to select 30 pairs of trait words which sampled a broad range of desirability-undesirability. According to Anderson's data, the mean desirability ratings of the two traits in any pair varied by .02 or less, on a seven-point scale. Trait pairs were selected to fit three categories of degree of polarization: extreme, moderate, and small. Each category included five pairs of desirable traits and five pairs of undesirable traits. Within each category, positive and negative traits were matched for degree of polarization. The degree of matching is reflected in the following mean polarity values: extreme polarity, 2.30 for both desirable and undesirable traits; moderate polarity, 1.35 for desirable and 1.34 for undesirable traits; small polarity, .44 for desirable and .34 for undesirable traits.

c. Procedure. Subjects were requested to rate the degree of difference in desirability or undesirability between the two traits in each pair. A five-point scale ranging from "not at all different" to "extremely different"

was used. They were cautioned to respond only to differences in desirability-undesirability, as they personally perceived them, and not to be influenced by the degree of difference in the specific meanings of the words.

The trait pairs were listed semirandomly, with the restriction that each successive group of six pairs contained one desirable and one undesirable pair from each of the three polarity categories.

2. Results

The first hypothesis, that perceived differences in evaluation would be greater within negative trait pairs than positive, was tested by combining data over both sexes and all three polarity categories. Mean differentiation ratings were 3.24 for undesirable trait pairs, and 2.96 for desirable traits. The difference was significant for both sexes ($t = 3.57$, $df = 36$, $p < .005$, for men, and $t = 3.62$, $df = 36$, $p < .001$, for women). While the first hypothesis was clearly upheld, the lack of any sex difference failed to support the third hypothesis.

The second hypothesis, concerning the effects of degree of polarization upon the relative differentiation of positive and negative traits, was evaluated by first determining each subject's total differentiation ratings for the five positive and the five negative pairs in each polarization category. The difference between these totals was then derived, resulting in three difference scores for each subject, with the scores reflecting the amounts of difference in differentiation for desirable and undesirable trait pairs at each level of polarity.

The difference scores were analyzed by a one-way analysis of variance with repeated measures (sex \times polarization category). The second hypothesis was supported by a significant effect for degree of polarization ($F = 18.39$, $df = 2/144$, $p < .001$). In each category, negative traits were perceived as being more different in value than positive traits and the difference increased with degree of polarization. The mean differences, per pair, were .01 for minimally polarized traits, .26 for moderately polarized traits, and .59 for the extremely polarized traits.

Again, the third hypothesis received no support. Neither the main effect for sex nor the interaction of sex and polarization was significant ($F < 1.00$).

D. CONCLUSIONS

The results of the two studies appear to provide some extension to the variety of phenomena which Kanouse and Hanson (8) have linked together

under the heading of negativity bias. When desirable and undesirable trait-descriptive adjectives, matched for polarity according to bipolar ratings, were directly compared for relative neutrality of affect, positive traits were more frequently chosen. Consequently, the negative half of bipolar scales seems to have covered a greater affective range than the positive half. Also supporting this idea is the finding that the subjects perceived greater evaluative differences between matched negative traits than between positive traits. The fact that this difference increased with the degree of extremeness of the traits seems to confirm the notion that the full range of negative evaluations was abbreviated, or underestimated, by physical scales which used equal distances for positive and negative ratings.

It has been suggested that one reason for some manifestations of negativity bias, as in impression formation research, is that negative traits are more surprising, or occur less frequently than positive traits, and therefore tend to have more impact. Although this may be true in some cases, there is evidence that the negativity bias still occurs when the effects of surprisingness or infrequency are partialled out (9) or otherwise controlled (1). Besides, one would expect the influence of frequency to show up in the original ratings of the terms. For example, although "sincere" might be the norm and "phony" a more rare occurrence in human affairs, the two words were found to have identical degrees of polarity (3). Yet 47 of 58 subjects in the first study chose "sincere" as being more neutral than "phony" ($p < .001$). An infrequency type of explanation does not seem to be very helpful here.

With regard to the matter of sex differences, or lack thereof, the present results do not support the earlier (5) proposition that American college women experience a greater range of affect than men in response to relatively mild, positive stimuli. Unless the present studies did not provide an appropriate test of this hypothesis, it would appear that differences between college men and women concerning extreme response style and relative consistency of positive and negative ratings require a somewhat different explanation than was originally proposed.

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EYE-CONTACT, FACIAL EXPRESSION, AND THE EXPERIENCE OF TIME*

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STEPHEN THAYER AND WILLIAM SCHIFF

SUMMARY

The relationship between interpersonal processes and the experience of time was examined in the context of qualitatively different social interactions. Time spent in unpleasant as opposed to pleasant encounters is often experienced as passing slowly or "dragging." Positive or negative facial expressions were combined with shorter (12 seconds) or longer (36 seconds) periods of eye-contact between female subjects and same or opposite-sex confederates. Subjects also served as their own controls by estimating 12- and 36-second nonsocial intervals. Reproduction of time periods during which eye-contact was maintained indicated that time was experienced as passing more slowly (greater overestimation relative to clock time) when combined with a negative-unpleasant (scowling-angry) rather than a positive-pleasant (smiling-friendly) facial expression. This effect was most pronounced for female-female encounters.

A. INTRODUCTION

Despite the wide range of experimental situations used to investigate time perception, no research has examined the impact of interpersonal processes on temporal judgment. The bulk of previous research has found that the qualitative nature of events of various durations does not lead to significant differences in time judgments (e.g., 20, 21). Rather, such studies indicate that arousal *per se* (positive or negative experiences relative to neutral experiences) results in relative overestimation of event duration. But the arousal conditions in these experiments were not *social* in nature.

Under certain circumstances, one might expect that identical periods of time spent with others would be experienced as passing more rapidly or slowly depending upon the pleasant or unpleasant quality of the encounter.

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A. INTRODUCTION

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Of numerous possible social factors, one important element contributing to the affective quality of social encounters is the unique message of intimacy and immediacy communicated by eye-contact (2, 7, 11, 17, 22, 26).

In addition to a number of regulatory and monitoring functions in social intercourse (e.g., 13), eye-contact may convey affiliative-sexual, as well as aggressive-competitive messages (e.g., 1, 24, 25). It has been proposed that in combination with situational factors, these affective messages are communicated by an increase in frequency, or by a prolongation of the usually brief visual engagements common to the ebb and flow of everyday interaction (e.g., 1, 25). Prolonged looking or eye contact, it seems, has the power to heighten intimacy by communicating increased interest in the other *person*, as opposed to other aspects of the situation. A correlate of this experience is an increase in the level of emotional arousal manifested by the recipient of, or parties to, extended looking (15, 18). In fact, Hutt and Ounsted (12) even suggest that gaze aversion may be a built-in biological adjustment to high arousal.

In addition to a number of encounter-specific variables (setting, status, conversational content, etc.) consideration of the determinants of a person's reactions to extended eye-contact and its emotionally arousing impact must take into account the facial expression surrounding the eyes. That is, facial expression is a critical factor that can profoundly influence the pleasant or unpleasant quality of an encounter (5, 17, 28). It appears that prolonged eye-contact conveys intense feelings about another with consequent high arousal, but it is the facial expression surrounding the eyes that conveys the nature of the feelings being communicated and the resulting pleasant or unpleasant experience for the recipient. In certain respects this position is similar to Ekman and Friesen's (4) finding that facial cues primarily communicate the quality or nature of an emotion while body cues primarily communicate information about the intensity of the emotion.

The present study was concerned with the impact of eye-contact and facial expression on the experience of time. Eye-contact should be relevant to temporal judgments because of the high degree of arousal associated with it. An affective-cognitive correlate of extended eye-contact between all but the closest friends is the extreme discomfort created by such atypical intimacy. In such situations time may seem to drag, with the result that subjective time may be overestimated relative to clock time and the period of eye-contact should seem longer than it really is. Several investigators have noted that arousal theoretically triggers or accelerates an "internal clock" mechanism, making clock time appear to pass more slowly, result-

ing in temporal overestimation (14, 20, 27). Further, because of the facial context in which extended looking is embedded, it would seem that the display of a negative facial expression would be more unpleasant and stressful than a positive facial expression when combined with prolonged eye-contact, and one should find correspondingly longer temporal overestimates. Moreover, if arousal increases with the duration of the experience, as the period of eye-contact increases, one would expect to find still greater overestimation.

Only female subjects were used in the present study, since available evidence indicates that American women are more visually responsive than American men to variations in the affective quality of social encounters (e.g., 6, 8, 29). Females more so than men engage in eye-contact, and for longer periods in pleasant interactions, and less frequently and for shorter periods in negative or competitive interactions.

B. METHOD

1. Subjects

The subjects were 48 female volunteers who had been recruited from undergraduate classes at CCNY.

2. Procedure

Each subject was asked to reproduce an elapsed period of time on a masked stopwatch under two conditions: (a) a neutral-baseline interval during which the subject simply waited for a particular period of time to pass (12 or 36 seconds), and (b) an experimental interval (identical in length to the neutral interval) during which the subject maintained eye-contact with an experimental confederate (male or female). The subject was seated at a table placed against a small curtain set into a wall partition dividing two parts of the room.

The following instructions were given for the neutral interval: "This is an experiment in time judgment. Before we begin, could I ask you to put your watch away? I'll ask you to judge the amount of time that has passed between the time the curtain opens and closes. Please don't count or talk. You'll use this masked watch to show me how long the interval was." (A demonstration of the stopwatch followed).

The instructions for the eye-contact interval were as follows: "There is a person sitting behind the other side of this curtain. When I open it, I'd like you to look at the other person's eyes. Please keep looking at the person's eyes until the curtain closes. I'll ask you to judge the amount of time that

has passed between the time the curtain opens and closes. Please don't count or talk. You'll use this masked watch again to show me how long the interval was."

During the eye-contact interval the confederate maintained one of two facial expressions, negative-unpleasant (scowling-angry) or positive pleasant (smiling-friendly). The former may be described by slightly lowered eyebrows, tight compressed lips, the latter by eye-brows in normal resting position, closed lips in broad smile. The distance between the subject and the confederate was approximately four feet.

Two stopwatches were available. One was used by the experimenter to time the intervals, the second, whose face was masked with tape, rested on the subject's table.

In summary each subject was exposed to a neutral condition, and an experimental condition randomly assigned from a combination of the three variables: Sex of partner (male, female), Facial Expression of partner (smiling-friendly, scowling-angry), and Duration of interval (12, 36 seconds). The purpose of the experiment was explained at the end of each testing session.

C. RESULTS AND DISCUSSION

Table 1 presents the mean reproductions for neutral-baseline and experimental conditions. A $2 \times 2 \times 2$ analysis of variance of reproduced eye-contact intervals indicated significant main effects for Duration ($F = 297.95$, $df = 1/40$, $p < .001$), Expression ($F = 4.08$, $df = 1/40$, $p < .05$), and a significant Sex \times Expression interaction $F = 5.27$, $df = 1/40$, $p < .05$).

TABLE 1
MEAN REPRODUCTION (SECONDS) FOR BASELINE AND EYE-CONTACT

Sex of partner	Baseline		Expression	Eye-contact	
	12	36		12	36
Female	13.5	38.6	Smile	12.9	33.6
	16.3	45.1	Scowl	14.7	43.9
Male	13.4	34.3	Smile	11.3	36.0
	15.5	39.6	Scowl	12.0	34.5

Additional analyses of variance of the difference in reproduction between the eye-contact conditions and the neutral-baseline conditions, as well as the accuracy of reproductions (deviation from clock time) for the eye-contact conditions, showed no significant differences.

Results for Duration were not surprising, since earlier research has shown that intervals as different as 12 and 36 seconds are usually reproduced differently (10). Results for the role of Facial Expression showed that with the exception of one condition, time judgments of eye-contact intervals combined with a scowling-angry expression were greater than time judgments for eye-contact intervals combined with a smiling-friendly expression. In terms of the pleasantness of social encounters this suggests that interactions involving angry expressions were more stressful and led to relatively greater overestimation. That is, subjects in the angry expression conditions may have experienced a greater degree of discomfort so that clock time appeared to pass more slowly, and overestimation resulted (e.g., 9). In contrast to various sensory and motivational experiences (e.g., 20, 21) the present results indicate that arousal *per se* in social encounters does not alter the experience of time. Rather, for the specific nonverbal factors examined here, and possibly for additional social variables, the qualitative nature of an interpersonal experience does influence the perception of time. Unpleasant social encounters lengthen experienced time, making it "drag." The hypothesis that amount of overestimation would increase with a longer unpleasant interval, however, received no support.

These results may suggest a more general phenomenon: that the duration of temporal intervals is judged to be longer when an individual is being subjected to unpleasant stimulation than when he is being pleasantly stimulated.

There are two points however that must be considered in evaluating this more general proposition. First, with few exceptions (e.g., 3) most studies have found *no* difference in temporal judgment as a function of the pleasant or unpleasant quality of the event filling an interval (10, 14, 16, 19, 20, 23, 27). Rather, the affective quality of the experience, whether positive or negative, tended to have equivalent effects (generally overestimation) relative to neutral experiences.

Second, none of the studies just cited were conducted within an interpersonal context. In contrast, these experiments typically involved judgments of intervals composed of qualitatively different sensory experiences, apprehension, and even physical pain. Whether intense social situations have certain qualities that make them more liable to temporal distortion, perhaps because of their more ego-involving implications, is an intriguing notion, but one which unfortunately cannot be answered by the present study.

The remaining significant effect, Sex \times Expression, appears to be due

to the female-angry condition. In both durations the female-angry condition yielded the largest means, with female-angry (36 seconds) being significantly greater than the three other 36-second conditions (Duncan's Multiple Range Test, $p < .05$). Exline's (6) findings that for females a competitive orientation decreases eye-contact seems relevant here. Eye-contact with a same-sex partner (female) may have increased the tendency toward a competitive experience. Since all females in the present study complied with the request to maintain eye-contact, their usual gaze-aversion tendencies in stressful encounters could not be realized. The consequent negative arousal would be particularly acute when confronted with a partner who displayed an unpleasant (scowling-angry) facial expression. In contrast, duration of facial expression (combined with eye-contact) which one might expect to have a different impact in opposite-sex as opposed to same-sex encounters (perhaps because of heightened sexuality) did not influence time judgments to the same extent.

Finally we must consider the nonsignificant but relatively smaller overestimations of eye-contact intervals compared to baseline intervals. This outcome appears to argue against any especially arousing (time-distorting) qualities of eye-contact regardless of the accompanying quality of the facial expression. A possible explanation for this apparently contradictory finding, however, is that the baseline intervals were not "filled" intervals and during these intervals subjects had been instructed to attend to the passage of time. This situation itself would tend to make time pass more slowly and be overestimated. In contrast, the experimental intervals were filled with an engaging activity and it would be less likely that subjects would attend to the passage of time: i.e., time should appear to pass more rapidly and be relatively underestimated. This explanation parallels our earlier findings that control (unfilled) intervals tend to be reproduced longer than experimental (filled) intervals, regardless of the affective content of the latter (21, p. 898). In effect then, the fact that the filled experimental intervals *were* nevertheless overestimated attests to the arousing role of eye-contact, with differential impacts when combined with particular facial expressions.

In conclusion, we note that nonverbal signals were able differentially to alter temporal judgment of a social encounter. This finding adds to our appreciation and understanding of the special role these elements play in social situations. Surely eye-contact and facial expression are among the more important cues in face-to-face encounters that affect the quality of the encounter (e.g., 17, 28). The possibility that there may be a host of

additional variables in social encounters, especially aversive elements, that can influence durational judgment (e.g., unpleasant telephone conversations) should not detract from the present findings. It remains for these other possible factors to be identified and examined.

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CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, 95, 125-126.

ORGANIZATIONAL CONTROL AND EFFECTIVENESS IN A VOLUNTARY ASSOCIATION*¹

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This study replicates previous work on organizational control and extends the application of the control graph to an additional type of organization within a different culture. On the basis of earlier findings,^{2,3,4} it was hypothesized that organizational effectiveness would be positively related to the degree of democratic distribution of control (control exercised by lower level participants), amount of total control (cumulative amount of control of all members), and consensus regarding control (degree of similarity in perceptions of control between respondents at various levels in the organization). Consensus pertaining to total control was hypothesized to be more closely related to effectiveness than consensus as to distribution of control.

The study was based on a survey of the total membership of the Australia-New Zealand region of an international voluntary association.

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¹ We wish to express our appreciation to Professors T. Bennett and D. Robinson of George Williams College for making available the data upon which this study is based.

² Kavcic, B., Rus V., & Tannenbaum, A. S. Control, Participation, and Effectiveness in Four Yugoslav Industrial Organizations. *Admin. Sci. Quart.*, 1971, 16, 74-86.

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COOPERATION AS A FUNCTION OF PLACE OF RESIDENCE IN COLOMBIAN CHILDREN*

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Recent conflict resolution researchers have been concerned about the validity of experimental games in their abstract form.^{2,3} Madsen's Cooperation Board seems to be an ideal instrument for the study of cooperation and conflict resolution with children, since it provides the subjects with a concrete situation and thus escapes the criticisms made of abstract games. Shapira and Madsen⁴ have found that city children cooperate less than rural ones. Wichman⁵ has found that complete communication furthered cooperation at least within the context of a Prisoner's Dilemma. The present researchers have tried to corroborate these findings within a different sociocultural context.

The subjects were 168 first grade children residents of an urban neighborhood or of a rural town in Colombia. Census data were utilized to obtain two samples with similar socioeconomic characteristics. Half the subjects were male and half female. The subjects were paired with a same- or different-sex partner to play the Madsen Cooperation Board for 10 trials. Candy was used as the reward for cooperation. Half the subjects were run in a talk-and-see condition, while the remaining half were instructed to keep quiet, and a screen made it impossible for them to see their partner. A 2 (place of residence) \times 2 (degree of communication) \times 3 (sex pairing) analysis of variance was conducted on the data obtained by considering the number of cooperative trials of the subjects.

The results indicate that males and females cooperated in a similar

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number of trials, the difference being nonsignificant. Contrary to Wichman's findings it was found that communication did not influence cooperative behavior in the game. The place of residence variable significantly influenced the cooperative behavior in the game ($F = 4.39$, df 1/155, $p < .05$); rural children cooperated more ($M = 2.48$) than urban children ($M = 1.69$), a fact which corroborates Madsen's findings for a different population.

Although the sex-related results contradict some of the previous findings with other conflict resolution games, they agree with recent studies in which the authors have proposed that the usual difference in cooperation between the two sexes is an artifact of the abstract games and not a population characteristic.⁶ The same could be said regarding the effect of the communication variable. The difference in cooperation between the urban and rural children further validates a concept that urban living promotes competition even at such an early age as that of the subjects of this study.

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⁶ Orwant, C. J., & Orwant, J. E. A comparison of interpreted and abstract versions of mixed-motive games. *J. Conflict Resolut.*, 1970, 14, 91-98. Also see footnote 2.

INTERPERSONAL PERCEPTION IN A NIGERIAN UNIVERSITY*

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The many studies of the interpersonal perception of members of different groups, such as ethnic groups, suggest that groups have differing sensitivities to personal characteristics which may be related to sociocultural conditions. In a study of Nigerian interethnic stereotypes, Bakare¹ found that there was not only divergent stereotyping in person-perception, but that there was an unexpectedly high degree of agreement between the perceptions of the self by members of one's own and of another ethnic group: there was "a kernel of truth" in interethnic stereotyping. Odebala² studied the perception of Nigerian female undergraduates by male undergraduates in four Nigerian universities, and both partly confirmed Bakare's generalization, and related the perception to early socialization: males tending to be both more "traditional" and more field-dependent than females.

In the present study the semantic differential technique was employed; some 21 bipolar adjectives were selected on the basis of a pretest, and with the use of a scale of 0-7 were applied to three concepts: (a) Where I would scale female undergraduates on this campus; (b) Where I would scale male undergraduates on this campus; (c) Where I would scale myself. A 10% random selection of 226 male and 55 female students were drawn from the student body of the University of Nigeria, Nsukka, but excluded freshmen.

The present study confirms the work of Bakare and Odebala. The main results were that male and female students tended to perceive the other sex less favorably than their own; that there was a discrepancy—partial, not total—between the perception of the self by one's own and by the other sex;

* Received in the Editorial Office, Provincetown, Massachusetts, on October 23, 1973. Copyright, 1975, by The Journal Press.

¹ Bakare, C. G. M. Metaperceptual congruence as a measure of the "kernel of truth" in Nigerian interethnic stereotypes. Paper delivered at 1st African Regional Conference of the International Association for Cross-Cultural Psychology, University of Ibadan, Nigeria, April 1973.

² Odebala, J. A. The Nigerian female undergraduate as perceived by her male counterpart and the psychological consequences. B.Sc. Honours research paper, University of Lagos, Yaba, Nigeria, 1972.

and that there was a tendency for a closer identification of the self with members of one's own sex than the other sex.

It was also found that religious affiliation, ethnic/tribal membership, and socioeducational background made no significant difference to person-perception evaluation. As a possible explanation it is suggested that the significant factors are the small number and high "visibility" of females within the university, and upon the general role and status situation of females in Nigeria as a whole. Within a predominantly male university, and in a society in which women are only now beginning to advance towards equality with males in filling professional roles, females have many of the perceived characteristics of a minority group and the role and identity problems frequently associated with such minority status. The finding of Campbell³ that target or minority groups tend to accept the descriptions attributed to them by majority groups was found in this study to apply partially to the females, but was modified by the females' perceiving themselves as a group more favorably than they were by males.

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³ Campbell, D. T. Stereotypes and the perception of group differences. *Amer. Psychol.*, 1967, 22, 817-829.

FUTURE TIME PERSPECTIVE IN INDIAN AND AMERICAN COLLEGE STUDENTS*

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Man's concern with time has been manifested in his everyday behavior, in popular songs, in novels, and as an important component of behavioral theory. The literature is rich in studies of time, and an excellent analysis and review is available.¹ Meade's work was most relevant to the present study.²

This study examined Future Time Perspective (FTP) in Indian and American college males and females. Subjects were 94 male and 115 female U.S. college students, and 152 female and 51 male Indian college students. In age, Indian and American males averaged 20 years, American females 19½, and Indian females 18 years.

All students were administered an extended demographic questionnaire and an FTP questionnaire requesting the listing of 10 events they expected to occur in their future, with the year of occurrence. Scores were based on total years for all events and for numbers of events. Content analysis was also performed. An analysis of variance (Rhanova) was performed on data for total years and number of events. In total number of future years, Indian and American males showed nonsignificant differences. For number of events, Indian and American males differed significantly, $F = 12.09$, $p < .001$ (American males higher). On years, American females showed significantly higher total years than Indian females, $F = 56.33$, $p < .0001$. For events, American females listed significantly more events, $F = 387.69$, $p < .0001$. There were significant differences by nationality on years FTP and events, Americans having higher totals: years $F = 46.72$, $p < .001$; events $F = 303.47$, $p < .0001$. Significant differences by sex were also noted: years FTP $F = 17.66$, $p < .0001$; events $F = 50.09$, $p < .0001$. The sex/nationality interaction was not significant

* Received in the Editorial Office, Provincetown, Massachusetts, on October 31, 1973. Copyright, 1975, by The Journal Press.

¹ Doob, L. *Patterning of Time*. New Haven: Yale Univ. Press, 1971.

² Meade, R. D. Future time perspectives of college students in America and in India. *J. Soc. Psychol.*, 1971, 83, 175-182.

for years but was for events, $F = 9.60$, $p < .0025$. Low scores by Indian females account for most of the effect.

Content analysis revealed no differences except in the listing of death as an anticipated event. A χ^2 analysis revealed that American males listed their own death more often than American females ($\chi^2 = 5.99$, $p < .05$). Indian and American males did not differ. American and Indian females significantly differed ($\chi^2 = 12.46$, $p < .01$). Americans listed their own death date significantly more often than Indians, $\chi^2 = 5.83$, $p < .05$.

The results indicate marked quantitative differences between Indian and American college students, yet there is remarkably similar content. Young males and females in both cultures have similar goals, ambitions, and dreams. That their time span for achieving many of these goals is different undoubtedly is culturally based. India is primarily a pre-industrial culture with 82% of the population considered rural.

An Indian medicine increases longevity, as technological needs demand increased skills, and people are not forced into earlier retirement by an oversupply of trained individuals, there should be a concomitant increase in future expectations and in FTP.

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REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, 95, 133-134.

PERCEPTION OF A SUCCESSFUL PERSON OF THE SAME SEX OR THE OPPOSITE SEX*

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Horner¹ has used a projective test to demonstrate that many white American women who value success also have a "motive to *avoid* success." In response to the cue "After first term finals, Anne finds herself at the top of her medical school class," many of Horner's female subjects wrote stories indicating that negative consequences such as social rejection, loss of femininity, and guilt follow success for a woman. In contrast, the cue given to *male* subjects, "After first term finals, John finds himself at the top of his medical school class," tended to elicit stories describing happiness, satisfaction, and social reinforcement for the successful male.

Horner has suggested that male peers may encourage or inhibit the motive to avoid success in young college women. For instance, Schwenn² found that young college women who were striving for innovative, rather than traditionally female careers, tended to be engaged to or seriously dating young men who encouraged their success. It is important to determine, then, whether the majority of young American men today are pleased by female achievement and, conversely, how the young women of today feel about a successful young man. In order to assess these percep-

* Received in the Editorial Office, Provincetown, Massachusetts, on September 24, 1973.

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¹ HORNER, M. S. Toward an understanding of achievement-related conflicts in women. *J. Soc. Iss.*, 1972, 28(2), 157-175.

² SCHWENN, M. Arousal of the motive to avoid success. Unpublished junior Honors paper, Harvard University, Cambridge, Massachusetts, 1970.

tions, the present study repeated Horner's work, adding two conditions, one in which young women responded to the cue of the successful John, and the other in which young men responded to the cue of the successful Anne.

Forty white male and female college students served as experimenters, doing so as part of a class assignment. In order to standardize the procedure, subjects were presented with written instructions. Subjects were white, between 18 and 30 years of age, and either college students or recent graduates. The John cue was responded to by 117 male subjects and 114 female subjects, and the Anne cue by 119 male subjects and 125 female subjects.

Coding of the stories was carried out by two judges³ using Horner's criteria. Stories were said to evidence "motive to avoid success" when either success was denied (e.g., "Anne will make a good nurse") or negative consequences were predicted.

Results of the study replicated those of Horner: More females projected a "motive to avoid success" onto Anne than did males onto John (50% *vs.* 35%, $\chi^2 = 5.82$, $df = 1$, $p < .02$). In fact, the majority (65% and 68%) of *both* males and females predicted a good life for the lucky John, while at least half or more of *both* males and females wrote "motive to avoid success" stories for Anne. However, significantly *more* male subjects than female subjects wrote such stories about Anne (64% *vs.* 50%, $\chi^2 = 4.51$, $df = 1$, $p < .05$). Moreover, some male stories that could not be coded as "motive to avoid success" seemed nevertheless hostile toward Anne—accusing her of being antimale. A male "backlash" seemed to be evidenced, indicating perhaps that many young men are somewhat opposed to what they regard as the attitudes of women's liberation.

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³ The author would like to thank Henry Solomon for his invaluable help.

A BEHAVIOR INVENTORY TO MEASURE ACHIEVEMENT MOTIVATION*

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There have been many Likert-type scales used in studies of achievement motivation. Of the 41 known to the present author, none have been demonstrated to be at once reliable, valid, balanced against acquiescent set, and applicable to nonstudent samples.

At least one of these scales was designed from the beginning to be satisfactory in terms of all four criteria. It is the Ray-Lynn "AO" scale. It is therefore desired to set on record here the details of this scale's construction.

The initial item-pool for the scale¹ contained only items phrased as direct questions about the respondent's behavior (to be answered "Yes," "?" or "No"). Myers² has shown that this format can produce a scale with remarkably high validity. (Myers' own scale was, regrettably, quite student-specific.)

The 56-item pool was administered to a group of 120 Australian Army conscripts. These are a highly heterogeneous group. All 20-year-old males resident in Australia were at the time liable for selective call-up on a randomized basis.

A reduced 30-item scale was produced which showed a quite satisfactory reliability (Coefficient "alpha") of .78. Of these 30 items, 13 were negatively worded. The items of this scale and details of their scoring are given elsewhere.³

The validity of the new scale was examined by having students administer it to people they knew—under the constraint that half the final sample were to be in manual occupations and half in nonmanual occupations. It was thus hoped to encompass a wide spread of responses and make the

* Received in the Editorial Office, Provincetown, Massachusetts, on October 11, 1973. Copyright, 1975, by The Journal Press.

¹ Many of these items were devised and kindly made available by Prof. R. Lynn.

² Myers, A. E. Risk taking and academic success and their relation to an objective measure of achievement motivation. *Educ. & Psychol. Meas.* 1965, **25**, 355-363.

³ Ray, J. J. Christianity . . . The Protestant ethic in unbelievers. *J. Christ. Educ.* 1970, **13**, 169-176.

validity demonstration applicable across socioeconomic differentials. The final n for this sample was 70. To provide validity criteria, each subject was rated by the person who gave him the questionnaire. The use of peer or supervisor ratings as a criterion for validity is of course common practice in many applied fields, such as industrial psychology. It has the effect of treating the rater as an accumulating data bank about the subject which can be tapped to provide a picture of the subject's behavior *in general*.

High scorers on the new "AO" scale were found, then, to be rated as "Task oriented" ($r = .261$; $p < .025$), not "Lackadaisical" ($r = -.245$; $p < .025$), and not "Leisure oriented" ($r = -.218$; $p < .05$).

Predictive validity was also demonstrated: with occupational status as a criterion of *actual* achievement, a correlation between this and scores on the "AO" scale of .391 was found. Overall, then, some validity for the new scale has been demonstrated. The reliability of the scale on the second sample held up well at .76.

It is shown then that all four criteria initially suggested for a satisfactory scale in this area have been met to at least some degree by the Ray-Lynn "AO" scale.

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THE EFFECT OF EXTENDED CONTACT WITH "NORMALS" ON THE SOCIAL BEHAVIOR OF HARD-OF- HEARING CHILDREN*

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It has been substantiated that prejudice against a stigmatized or handicapped person will eventually result in a negative reaction to social contact for that person.¹ One could easily argue that just as negative forms of behavior are learned, more positive forms of interaction can also be developed. Specifically, if a handicapped and a normal person were afforded the opportunity to become acquainted with each other, perhaps prejudice or lack of understanding might be reduced. The present study examined the effect of extended contact with "normals" on the subsequent social behavior of a group of hard-of-hearing children.

There were 30 Ss, an equal number of boys and girls in each of three groups. All children were of comparable age to grade six. The first group consisted of hard-of-hearing children who had been transferred to a normal public school because of overcrowding within an institutional home and school. The second group was a comparison group of hard-of-hearing children who attended the institutional school. Their contact with normal children, unlike Group 1, was very limited. The third group was also a comparison group consisting of normal children. Since the hard-of-hearing children had also been matched on degree of hearing impairment and residence status, it was reasonably concluded that the major variable on which they differed was amount of "normal" peer contact during their daily existence.

To record interpersonal distances between each S and a "normal" person (an experimental confederate), a similar direct-physical interaction technique to previous research was employed.² Respective distances for three

* Received in the Editorial Office, Provincetown, Massachusetts, on October 30, 1973. Copyright, 1975, by The Journal Press.

¹ Lever, H. An experimental modification of social distance in South Africa. *Hum. Relat.*, 1965, 18, 149-154. Also Noel, D. I., & Pinkney, A. Correlates of prejudice: Some racial differences and similarities. *Amer. J. Sociol.*, 1964, 69, 609-622.

² Mallenby, T. W. A note on perceived self-acceptance of institutionalized mentally retarded (IMR) children. *J. Genet. Psychol.*, 1973, 123, 171-172. Also Mallenby, T. W. Personal space: Projective and direct measures with institutionalized mentally retarded children. *J. Personal Assess.*, 1974, 38, 28-31.

dyadic interactions were recorded; the first was initial interaction distance, the second was after the normal person had intruded into the S's personal space territory, and the third was after the normal person had exhibited "physical" rejection toward the S. An analysis of variance for interaction distances indicated a significant group effect ($F = 66.10$; $df = 2/24$; $p < .01$), but not sex effect.

The results of each of the interaction situations revealed that the hard-of-hearing children and normal children did, in fact, differ in their displayed interpersonal distances or personal space. The difference, however, was as expected in that the hard-of-hearing children who attended the institution (Group 2) stood farther from the normal person and exhibited more of a distance (flight) reaction to intrusion and "physical" rejection than did either the normal children (Group 3) or the hard-of-hearing children who attended the normal public school (Group 1).

Although not conclusive, the present study does suggest that prolonged interaction with normal children can influence the social behavior of a group of hard-of-hearing handicapped. It seems, then, that social contact with "normals" may facilitate self-acceptance for a stigmatized individual, which results in positive attitudes about socially interacting with others.

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CURRENT PROBLEMS AND RESOLUTIONS

Under this heading appear summaries of data which, in 500 words or less, would increase our comprehension of socially compelling problems, hopefully move us somewhat closer to a solution, and clearly show promise of transcending their own origin in the Zeitgeist; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, 95, 139-140.

COLLEGE MALES' IDEAL FEMALE: CHANGES IN SEX-ROLE STEREOTYPES*

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Elman *et al.*¹ found that the concepts of ideal-other sex roles closely parallel the male and the female sex-role stereotypes traditionally endorsed within American society.² The ideal female was perceived as significantly less aggressive, dominant, and active than the ideal man; while the ideal man was perceived as significantly less religious, expressive, and gentle than the ideal female. Further, these differences appeared to be approved of even within a college population.

The present study re-examines self- and other-ideal stereotypes among college males and females in view of the effects of both the consciousness raising efforts of the female liberationists and women's study programs on campuses across the country. The subjects were 47 male and 47 female introductory psychology students at a moderate-sized state university in the

* Received in the Editorial Office, Provincetown, Massachusetts, on November 26, 1973. Publication advanced for technical reasons. Copyright, 1975, by The Journal Press.

¹ Elman, J. B., Press, A., & Rosenkrantz, P. S. Sex-roles and self-concepts: Real and ideal. Paper presented at the meeting of the American Psychological Association, Miami, August 1970.

² See, for example, McKee, J. P., & Sherriffs, H. C. Men's and women's beliefs, ideals, and self-concepts. *Amer. J. Sociol.*, 1959, 64, 356-363; or Rosenkrantz, P. S., Vogel, S. R., Bee, H., Broverman, I. K., & Broverman, D. M. Sex-role stereotypes and self-concepts in college students. *J. Consult. & Clin. Psychol.*, 1966, 64, 265-276.

Midwest in the winter of 1973. Ss' perceptions of themselves and their ideal member of the opposite sex were measured on a 21-item bipolar sex-role questionnaire based on the items used by Rosenkrantz *et al.*³ The order of presentation for self- and ideal-other perceptions was reversed for half the sample.

Two factor analyses of variance were computed for each item by sex and self *vs.* ideal-other. The males rated themselves as significantly more aggressive ($p < .01$), independent ($p < .05$), dominant ($p < .10$), stronger ($p < .05$), and tougher ($p < .01$) than the females rated themselves. However, the females perceived themselves as significantly brighter ($p < .01$) and more responsible than the males. No significant differences were obtained between the males' and females' perceptions of their "real" competence, competitiveness, successfulness, and rationality. However, the males' ideal female was significantly more competent ($p < .05$), adventuresome ($p < .01$), and independent ($p < .01$) than either the females' actual self-ratings, the males' self-ratings, the females' ratings of their ideal male. Finally, the males' self-ratings indicated that they neither perceived themselves to be as bright ($p < .01$) as females or their ideal others, nor did they feel as superior ($p < .01$) as the females indicated they felt ($p < .01$). Thus, while the differences in the male and the female actual self-ratings and the females' ratings of ideal male tended to reflect the traditional cultural sex-role stereotypes, the males' ratings of their ideal female revealed an ideal-profile of Wonderwoman, characterized as more competent, competitive, successful, and adventurous than college females' ratings of their ideal male.

The college males employed in the present study appeared to be begging not to be labeled "Male Chauvinist Pigs." It appears that these males perceive it to be socially desirable to espouse sexual equality, and maybe even tip the scale a bit in favor of females.

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³ See footnote 2.

EFFECTS OF MATERNAL AGE, EDUCATION, AND EMPLOYMENT STATUS ON THE SELF-ESTEEM OF THE CHILD*¹

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Self-esteem in children seems to be affected by a variety of factors. Coopersmith² and Miller³ have found self-esteem to be related to sociocultural differences with lower levels of self-esteem being realized among disadvantaged children and adolescents. Davidson, Greenberg, and Gerver⁴ and Witty⁵ found higher levels of self-esteem for disadvantaged than for advantaged adolescents. The present research investigates the mother's age, education, and employment status as significant factors.

An all black inner city sample ($N = 61$) and an all white suburban sample ($N = 97$) of 8th grade children and their mothers (total $N = 158$), representing educational, social, and ethnic differences, were chosen from a random selection of schools within six school districts. The Self-Esteem Inventory² (58 items) was administered to each child. A variety of demographic data related to home, family, and education were obtained from each mother, including her age, the highest level of formal education achieved in years, and whether she was unemployed, employed part-time (less than 35 hours per week) or employed full-time (35 hours per week or more). The administration of the Self-Esteem Scale to the children was achieved within the group-classroom situation.

Analysis of variance for the effects of sex and race on the child's level of self-esteem yielded significant findings. In comparing the black inner city sample and the white suburban sample, mother's level of education was

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¹ Research Foundation of State University of New York, Grant No. 50-8890-F supported this study. Request for reprints should be sent to the author.

² Coopersmith, S. *The Antecedents of Self-Esteem*. San Francisco: Freeman, 1967.

³ Miller, T. W. Cultural dimensions related to parental verbalization and self-concept in the child. *J. Soc. Psychol.*, 1972, 87, 153-154.

⁴ Davidson, H. H., Greenberg, J. W., & Gerver, J. M. The characteristics of successful school achievers from a severely deprived environment. Unpublished manuscript, City College of New York, 1962.

⁵ Witty, P. A., Ed. The educationally retarded and disadvantaged. Yearbook Nat. Soc. for Stud. Educ., 1967, 66, Part I.

found to be significant for the main effect of sex ($F = 3.5995$, $df = 1/157$, $p < .05$). Mother's educational level was found to have an effect on the child's self-esteem for the inner city black male sample. Where mother has less than a high school education, the male child seems to have lower levels of self-esteem.

A significant univariate F ratio for the main effect of race on employment status of the mother was realized ($F = 10.8670$, $df = 1/157$, $p < .05$). This suggests full-time employment of the mother has a greater effect on the child's self-esteem for the inner city sample than for the suburban sample. The effect of mother's age on self-concept was not significant.

Self-esteem of inner city males seems to be affected by the amount of the mother's formal education, suggesting that mothers who complete high school may possess qualities that promote greater feelings of confidence and self-worth in their sons. This did not emerge as significant for the inner city female sample.

The full-time working mother is faced with "divided loyalties" and it would appear from these results that the inner city boy and girl's self-esteem points to lower concept of self. Mother's employment status appears to have less of an effect on the self-esteem of suburban children. This may be due, in part, to the alternatives more readily available to suburban mothers and children which provide dimensions of self-esteem building. Recent research efforts to assess the level of self-esteem of culturally different groups have come under question.⁶ The differences realized in this study support the concept that environment influences self-concept.

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⁶ Getsinger, S. H., Kunce, J. T., Miller, D. E., & Weinberg, S. R. Self-esteem measures and cultural disadvantage. *J. Consult. & Clin. Psychol.*, 1972, 38, 149.

PLAYBOY STUFF AND OTHER VARIABLES:
SCHOLARSHIP, ATHLETICS, AND
GIRL FRIENDS*

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Statements by medical, allied medical, and political authorities¹ regarding "cause and effect"² relationships between exposure to sexually oriented materials and antisocial or "deviant" behavior fail to be in agreement. Inadequate data seem to be in part responsible for the lack of agreement and for the inability to determine the direction of any "cause and effect" relationship.

The present study, while lacking the design needed to infer cause and effect, does provide some data. The purpose of the study was to determine whether the presence or absence of Playboy type pictures in male dormitory rooms was related to the variables of academic performance, commitment to a girl friend, or participation in varsity athletics.

Academic performance was divided into high and low categories: GPA above 3.0 and below 2.0, respectively. Commitment to a girl friend was inferred by the presence or absence of a girl's picture in the room (unlike the Playboy variety these were pictures of conventionally clothed females). This means of operationally defining commitment to a girl friend suffers from a number of inadequacies including the possibilities that the picture may be the man's sister or the picture of some girl he has known and has posted so as to be like other men in the dorm. Participation in varsity athletics was determined by membership on a regular varsity team.

One hundred sixty-nine male dormitory residents were surveyed. Rooms of subjects were checked to see if Playboy type pictures and / or pictures that might be considered to be of the girl friend variety were displayed.

* Received in the Editorial Office, Provincetown, Massachusetts, on October 23, 1973. Copyright, 1975, by The Journal Press.

¹ Armstrong, O.K. The Damning Case Against Pornography. *Reader's Digest*, 1965, 87, 131-134. Gebhard, P. H., et al. Sex Offenders. New York: Harper & Row, 1965. Kronhausen & Kronhausen. *Pornography and the Law* (rev. ed.). New York: Ballantine Books, 1969.

² Cause and effect is placed in quotation marks to denote a generic use, and to call attention to the fact that neither opinion nor correlational studies, but only experimental design involving the manipulation of the independent variable is adequate to infer cause and effect.

Data were placed in two by two contingency tables and analyzed with the use of chi square with the Yates correction for continuity.

Significant differences were found on the academic performance and athletic participation variables. No significant difference was found on the variable of commitment to a girl friend. The .05 level of significance on the variable of academic performance indicates that male students with a GPA above 3.0 were less likely to display Playboy pictures than were those students with a GPA below 2.0. The .01 level of significance on the variable of athletic participation indicates that athletes were more likely than nonathletes to display Playboy type pictures. The presence or absence of a "girl friend's picture did not differentiate between those students who displayed Playboy pictures and those who did not.

It seems scholars focus on grades, while athletes focus on girls, which may say something for the orientation, motivation, and life style of each.

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Abstracts	<i>Abst.</i>	Journal	<i>J.</i>
American	<i>Amer.</i>	Mathematical	<i>Math.</i>
Anatomy	<i>Anat.</i>	Measurement	<i>Meas.</i>
Animal	<i>Anim.</i>	Medical	<i>Med.</i>
Applied	<i>Appl.</i>	Mental	<i>Ment.</i>
Archives	<i>Arch.</i>	Monographs	<i>Monog.</i>
Association	<i>Assoc.</i>	Neurology	<i>Neurol.</i>
Attitude	<i>Attit.</i>	Opinion	<i>Opin.</i>
Australian	<i>Aust.</i>	Orthopsychiatry	<i>Orthopsychiat.</i>
Behavior	<i>Behav.</i>	Personality	<i>Personal.</i>
British	<i>Brit.</i>	Personnel	<i>Person.</i>
Bulletin	<i>Bull.</i>	Philosophy	<i>Philos.</i>
Bureau	<i>Bur.</i>	Physics	<i>Phys.</i>
Canadian	<i>Can.</i>	Physiology	<i>Physiol.</i>
Character	<i>Charac.</i>	Proceedings	<i>Proc.</i>
Children	<i>Child.</i>	Psychiatry	<i>Psychiat.</i>
Chinese	<i>Chin.</i>	Psychoanalysis	<i>Psychoanal.</i>
Clinical	<i>Clin.</i>	Psychology	<i>Psychol.</i>
College	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
Comparative	<i>Comp.</i>	Quarterly	<i>Quart.</i>
Consulting	<i>Consult.</i>	Religious	<i>Relig.</i>
Contributions	<i>Contrib.</i>	Research	<i>Res.</i>
Development	<i>Devel.</i>	Review	<i>Rev.</i>
Educational	<i>Educ.</i>	School	<i>Sch.</i>
Experimental	<i>Exper.</i>	Science	<i>Sci.</i>
General	<i>Gen.</i>	Social	<i>Soc.</i>
Genetic	<i>Genet.</i>	Statistics	<i>Stat.</i>
Indian	<i>Ind.</i>	Studies	<i>Stud.</i>
Industrial	<i>Indus.</i>	Teacher	<i>Teach.</i>
International	<i>Internat.</i>	University	<i>Univ.</i>
Italian	<i>Ital.</i>		

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12/8
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9. Enclose a submission letter, with a statement that the manuscript is not under consideration elsewhere. If you are unknown to the Editors, kindly give your credentials.

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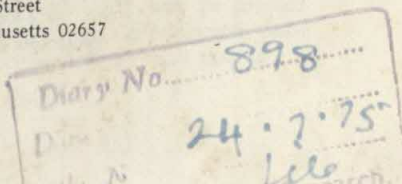
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LOCUS OF CONTROL DIFFERENCES BETWEEN RURAL AMERICAN INDIAN AND WHITE CHILDREN*¹

University of North Dakota

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SUMMARY

Fourth, seventh, ninth, and eleventh grade American Indian and white children were administered the Nowicki-Strickland Locus of Control Scale. It was predicted that Indians would have a greater tendency than whites to perceive that reinforcements are determined by factors external to themselves. It was also predicted that older children would be more internal than younger children and that Indian girls would be more internal than Indian boys. Support was obtained for all but the third hypothesis.

A. INTRODUCTION

Rotter has proposed that for human subjects, at least, behavior is influenced not only by the reinforcement history of the individual, but also by whether the individual "perceives a causal relationship between his own behavior and the reward" (11, p. 1). Furthermore, he has suggested that people differ in the degree to which they believe that they are able to influence the occurrence of reinforcing events. Those who believe that rewards tend to be determined by ". . . luck, chance, fate, as under the control of powerful others, or as unpredictable" (p. 1) are said to believe in external control. While the person who expects that events tend to be "contingent upon his own behavior or his own relatively permanent characteristics" (p. 1) is defined as believing in internal control.

A number of studies (7) have investigated the relationship between internal-external locus of control (I-E) and such variables as self-concept (2), information seeking (5), and the effects of summer camp experiences (9). Several investigators have explored the construct validity of the con-

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cept by comparing locus of control scores of culturally disadvantaged Ss with I-E scores of their white middle class counterparts. The rationale for such a comparison is that poverty class or racial minority Ss do, in fact, have less control over environmental reinforcements; hence, they should be more external on a measure of perceived locus of control. Findings consistent with this expectation have been obtained. Battle and Rotter (1) found that lower-class blacks were more external than lower-class white or middle-class Ss of either race. Lefcourt and Ladwig (6) found greater externality among black prison inmates than among white controls. Similarly, in a study of ninth graders of low socioeconomic status, Zytoskee, Strickland, and Watson (14) determined that blacks were more likely than whites to be external. Thus there is evidence that lower-class blacks, who in our society probably do have less control than whites over their fates, are more external than whites. This finding adds to the construct validity of the I-E concept. Clearly, however, it is desirable to replicate this finding on members of other racial groups who also have historically been disadvantaged relative to the white majority, and who it could also be argued, should perceive themselves as having less control over reinforcing events in their lives. There is considerable evidence that the American Indian fits this description. In a study of Indians in Minnesota, for example, Westermeyer (12), has noted that in Indian communities nearly all positions of authority in schools, clinics, and businesses are occupied by non-Indian people. Mohatt (8) has argued that the heavy incidence of alcoholism among the Sioux represents an attempt to compensate for the feeling of powerlessness that characterizes the contemporary American Indian. Ogden, Spector, and Hill (10) have suggested that poverty and unemployment are among the major factors accounting for the fact that the suicide rate among Indians is about twice that of the general population.

Thus the present study was designed to determine whether the trend toward higher external scores obtained for culturally disadvantaged blacks could be replicated on a population of Indian school children. A second objective was to examine Indian sex differences on an I-E measure. When white Ss are administered locus of control measures, sex differences typically are not found (9, 11) although this is not always the case (4). However, there are grounds for suspecting that in an Indian population, males and females might differ in the degree to which they see themselves as able to control environmental reinforcements. Mohatt (8) has noted that with the conquest of the American Indian in the late nineteenth century, most channels for Indian male expressiveness were eliminated.

No longer could a Sioux hunt, fight against the Crow or Pawnee and steal their horses . . . no longer could a man boast of brave deeds at the fire . . . the government outlawed the Sun Dance . . . the pervasive feelings of power from the old ways were replaced by intense feelings of defeat, helplessness and dependence (8, pp. 263-264).

Today, social conditions apparently continue to exact the greater toll on the Indian male. For example, there is evidence that female Indians advance farther in school than males, tend to occupy higher status jobs, and enjoy an equally high likelihood of being employed (12). Consequently, in the present study a second prediction was that Indian males would be more external than Indian females.

The third objective was to study changes in locus of control orientation as a function of age. To date, studies have been inconsistent with regard to this relationship. For example, Bialer (3) and Nowicki and Strickland (9) reported a positive relationship between amount of internality and age. However, the findings of Battle and Rotter (1), as well as the bulk of the results of Crandall *et al.* (4), provided no evidence that children become more internal with age.

B. METHOD

1. Subjects

Indian Ss consisted of students from the fourth, seventh, ninth, and eleventh grades of the reservation school on a rural upper-midwest Chippewa Indian reservation. Socioeconomic status for most reservation families falls within the lower class range. Unemployment is quite high. Control Ss were non-Indian students enrolled in a predominately white school located in a small town approximately 30 miles from the Indian school.

2. Procedure

Within the context of a battery of school administered tests, all Ss were given the Nowicki-Strickland (9) Locus of Control Scale for Children. The Nowicki-Strickland scale is a 40-item pencil and paper measure consisting of questions that are answered yes or no by placing a checkmark next to the question. "The items describe reinforcement situations across interpersonal and motivational areas such as affiliation, achievement, and dependency" (9, p. 149). Item wording was chosen so as to be appropriate for Ss ranging from third grade or lower through the twelfth grade. Nowicki and Strickland (9) have reported satisfactory reliability for the scale throughout the third through twelfth grade range.

C. RESULTS

Table 1 contains mean locus of control scores and mean ages across grade levels for Indian and white students of both sexes. A three-way analysis of variance (13) with two levels of Sex, two levels of Race, and four levels of Grade placement was used to evaluate the locus of control data. Both the Grade main effect ($F = 41.80$, $df = 3, 688$, $p < .001$) and the Race main effect ($F = 14.59$, $df = 1, 688$, $p < .001$) were highly significant. Significance was also obtained for the Grade \times Race interaction ($F = 3.07$, $df = 3, 688$, $p < .05$) and for the Sex \times Race interaction ($F = 6.07$, $df = 1, 688$, $p < .05$). No other effects were significant.

The significant Race main effect indicates that Indians did differ from whites in externality as was predicted. However, the significant Race \times Grade interaction indicates that this relationship varied with different grade levels. Consequently, one-tailed t tests were run at each grade level to compare Indian-white differences. Since the Sex \times Race interaction was significant, the Indian-white comparisons were made separately for each sex. At the fourth grade level, Indian males were significantly more external than white males ($t = 2.02$., $df = 90$, $p < .05$), and Indian females were significantly more external than white females ($t = 2.55$, $df = 78$, $p < .01$). At the seventh and ninth grade levels, Indian females were significantly more external than white females ($t_s = 3.14, 2.55$; $df_s = 94, 82$; $p_s < .01, .01$; respectively), but male differences, while in the expected direction, were not significant. No significant differences were obtained at the eleventh grade level.

Inspection of Table 1 indicates that except at the fourth grade level, Indian males were not more external than Indian females. Although in the predicted direction, the difference at the fourth grade level was not significant ($t = .37$, $df = 100$). Table 1 also shows that in general, older Ss were more internal than younger Ss. A Pearson product-moment correlation coefficient of $-.99$ was obtained when mean locus of control scores for each grade level were correlated with grade level.

D. DISCUSSION

For the most part, the data supported the hypothesis that culturally disadvantaged Indian children are more external than white children. In the present sample, this relationship held better for females than for males, and appeared to break down at the eleventh grade level. It is probably significant that the number of Indian Ss at the eleventh grade level was

TABLE 1
NUMBER OF CHILDREN, MEAN AGE, AND MEAN NUMBER OF EXTERNAL LOCUS OF CONTROL ITEMS ENDORSED
AT EACH GRADE LEVEL

Grade	Indian						White					
	Male			Female			Male			Female		
	N	Age	External items	N	Age	External items	N	Age	External items	N	Age	External items
4	57	9.79	19.11	45	9.65	18.80	35	9.63	17.03	35	9.52	16.60
7	64	13.06	15.14	62	13.07	16.81	45	12.67	14.42	34	12.59	13.97
9	56	14.93	14.43	50	15.16	14.54	52	14.55	13.27	34	14.52	11.79
11	30	16.85	12.07	34	16.83	12.91	44	16.58	14.11	27	16.65	11.85

only 64% of the number at the ninth grade level. It seems reasonable to speculate that the more external Indians, perceiving little advantage in completing their education, may have dropped out of school before the eleventh grade. Thus the sample of Indian Ss at the eleventh grade level may have been biased in the internal direction.

As already noted, no support was obtained for the hypothesis that Indian girls are more internal than Indian boys. It would be interesting to test this hypothesis on a sample of adult Indians who have had more direct exposure to the emasculating factors to be found in the Indian community (12).

Strong support was obtained for the hypothesis that internality increases with age. This finding is consistent with the results of Bialer (3) and of Nowicki and Strickland (9). Battle and Rotter's (1) failure to find this relationship is probably attributable to the fact that in their study, Ss were only about two years apart in age, a possibility noted by the authors. The fact that Crandall *et al.* (4) also failed to find a relationship with age may have been due to the fact that their measure of locus of control was designed to focus specifically on academic achievement situations rather than to sample a wide variety of reinforcement situations as does the Nowicki-Strickland scale used in the present study.

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CULTURAL DIFFERENCES IN PERCEPTUAL SELECTIVITY*

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K. D. BROOTA AND H. C. GANGULI

SUMMARY

Children in India from three different cultural backgrounds—Hindu, Muslim, and U.S. white—were the subjects in a study of perceptual organization under the controlled conditions of perceptual learning. With the use of a scheme of monetary reward and punishment it was found that the Hindu and the Muslim children perceived significantly more often than the Americans those aspects of the figure-ground situation which were previously associated with punishment during perceptual learning. On the other hand, the American children perceived the reward associated aspects significantly more often than the Hindu and the Muslim children. Further, perceptual responses of both the Hindu and the Muslim children were found to be significantly different from the responses of the American children.

A. INTRODUCTION

A variety of psychological, anthropological, and sociological data is available to substantiate the hypothesis that the cultural background of an individual influences his perceptual and cognitive processes. Some evidence for this view comes from the studies of illusions on different cultural groups (7, 10, 11). Perhaps the most striking example of perceptual selectivity is the study by Bagby (2) on binocular rivalry in Mexican and American subjects: the culturally less familiar pictures were perceptually suppressed, and the culturally more familiar pictures were perceived. In an effort to replicate the Schafer-Murphy (9) experiment on Hindu (Indian) subjects, Broota (3) found quite opposite results from those reported by Schafer and Murphy and others (1, 6, 13, 15) in the United States. The results of the latter experiment prompted us to examine the influence of culture on

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perceptual selectivity on subjects from three different cultural backgrounds, under controlled conditions of perceptual learning.

B. METHOD

1. *Subjects*

The Ss were 24 children from three different cultural backgrounds in India: eight Hindus; eight Muslims; and eight U.S. white. Their ages ranged from 8-12 years with a modal age of 9 years. All had normal or corrected vision. All belonged to a high economic level: the majority of parents of the American children were on diplomatic assignment in India, and the family income of the Hindu and the Muslim children was rupees one thousand or more, with family size of five or less. The Hindu children came from exclusively Hindu schools, the Muslim children from exclusively Muslim schools, and the American children from the American International School in New Delhi.

2. *Apparatus*

The apparatus consisted of two units: a Constant Illumination Tachistoscope (Lafayette Instrument Co.) and a glass-beaded projection screen. The tachistoscope has two projectors mounted side by side. It has two shutters, one in front of each projector, operating 180 degrees out of phase with each other. The normally closed projector is for stimulus slides, and the normally open projector provides constant illumination on the screen. In the normally open projector a blank slide is placed so that the illumination and area of its projection matches with the projected image of the stimulus by the other projector. Both shutters are operated by a common control, and in operation the normally open shutter closes and normally closed shutter opens instantaneously for the set duration of exposure. Thus, the apparatus provides the S with a fixation area, controls the formation of negative afterimages, and avoids a startle reaction resulting from the sudden illumination of the projected image. There is no time loss from the heating of the filament of the lamps.

3. *Stimuli*

The stimuli for the training session were four profile faces which made up two pairs of complementary faces. These were the same as those used by Schafer and Murphy (9, Figure 1, p. 336) and were assigned nonsense names, Bif-Del and Gid-Yup.

Two ambiguous figures, in a complete circle, were obtained by combining complementary profiles of the training series (9, Figure 2, p. 342). Thus, each figure represents a circle with an irregular vertical line in which either face can be seen as figure and the other half as ground. To break the directional and idiosyncratic set of the *S*, the two ambiguous composites were interspersed with their mirror images.

4. Procedure

a. Training session. One of the profiles of the complementary set was associated with a reward (positive reinforcement) of 20 paisa (1/5 of a rupee) and the other with a punishment (negative reinforcement) of 20 paisa. Similarly, the two profiles of the second set were associated each with a reward or punishment of 10 paisa. That is, whenever a particular profile associated with reward was presented, the *S* acquired 20 or 10 paisa from a cup containing coins; and for punishment, a similar amount was taken from the *S* and put back into the cup. The procedure was intended to build up a strong association between certain profiles and reward, and between other profiles and punishment.

Before presenting a profile on the screen, *E* called out its name and *S* repeated the name aloud after the exposure. To facilitate learning of the names of the profiles, rough sketches with the names of the profiles were prepared on a white card and kept before *S*, and he was encouraged to refer to them between the trials. Every time the *S* repeated the name, he was asked to take an appropriate amount if the face was associated with reward and put back an appropriate amount if the face was associated with punishment.

To maintain the interest of the *S*, he was told that it was a game of chance and he would end up with at least one rupee and possibly more, if chance favored. As a matter of fact, each *S* was left with one rupee at the end of the training session. This money was given to the *S* after the training session.

There were a total of 100 tachistoscopic exposures of the four profiles, 25 times each, randomly presented. The number of trials was found to be adequate for the perceptual learning task. The projection of the profile subtended a visual angle of $6^{\circ} 25'$ of an arc. To obviate the possibility of figure-ground reversal, the exposure time was kept at 200 milliseconds. A rest pause of five minutes was provided in the middle of the session.

At the end of the training session a trial test was given to see if the *Ss* could recognize the profiles and their names.

b. Testing session. The testing session followed after 10 minutes of the training session. The two ambiguous composites were exposed tachistoscopically in order to study the efficacy of the reinforcing events in directing figure-ground organization. The exposure time and visual angle were the same as in the training session. The time was sufficient for a single fixation but not adequate for perceptual alteration of figure and ground. There were 40 tachistoscopic exposures of the two ambiguous composites, 20 times for each situation. These exposures were interspersed with an equal number of their mirror images.

The task of the *S* was to report and write the name of the profile he had perceived and also to indicate, by hand movement, the direction in which the perceived profile face was looking. If a discrepancy was found in the two responses (verbal report and indicator response), the trial was repeated later during the session. This converging operation (5) insured that the observed effects could be properly assigned to the perceptual system, and conclusions could be drawn with confidence that the percepts reflected the effect of reinforcement and not merely of verbal conditioning. A rest pause of five minutes was provided in the middle of the session.

5. Design

A 3×2 factorial design was employed with repeated measures on the last factor (16, p. 518). The first factor represents three groups of children from three different cultures, having eight *Ss* in each group. The second factor represents two levels of reinforcement (20 and 10 paisa).

To obviate confounding of profiles and reinforcements, all the eight possible combinations of four profiles and rewards (20 and 10 paisa) and punishments (20 and 10 paisa) were used, and each *S* in a particular group was randomly assigned to one of the eight combinations. In each complementary set one profile was associated with reward and the other with punishment, and also in each pair the amount of reward and punishment was kept equal. The equiprobability of perceiving the four profiles, without any reinforcement, has amply been tested by Broota (3).

C. RESULTS

The perceptual responses, in terms of frequencies, were converted into proportions of punished percepts ($P/R+P$) in each reinforcement condition. The data after arcsin transformation were subjected to analysis of variance. Significant differences were obtained for the perceptual responses of the three groups of *Ss* [$F(2, 21) = 7.41$; $p < .01$]. *t* tests indicate that the

differences between the Hindu and the American and also between the Muslim and the American groups are significant beyond the .01 level of confidence, but the differences between the Hindus and the Muslims are not significant. The second factor represents the two levels of reinforcement (20 and 10 paisa), and the nonsignificant F value of this component indicates that the level of reinforcement had no effect on the perceptual responses. Interaction is also nonsignificant.

The means derived from the transformed data were retranslated into proportions, resulting in a mean proportion of punished percepts for each group. The mean proportions are .70, .59, and .37 for the Hindu, the Muslim, and the American groups, respectively. The proportions above .5 indicate that the S s perceived the punished faces more often, and below .5 the rewarded faces. Thus the perceptual responses of the S s from the Hindu and Muslim groups significantly favored those aspects of the ambiguous composites which were associated with punishment during the perceptual learning phase, whereas those of the American S s significantly favored the rewarded aspects ($p < .01$). The total wrong responses were only two percent of the total responses.

D. DISCUSSION

The similarity in the perceptual responses of the Hindu and the Muslim groups may have been due to the similarity in their socialization processes brought about by constant interaction, geographic proximity, common friends, and many other common features in these two cultures. These subjects may be said to belong to two subcultural groups within the Indian cultural fold. On the other hand, American subjects distinctly belong to another culture and also show maximum differences in perceptual responses from the subjects of the two Indian groups. The American group, furthermore, perceived significantly more often those aspects of the ambiguous figure-ground situation which were associated with reward, whereas the Hindu and the Muslim groups perceived significantly more often the punished aspects. The results obtained from the American subjects are in conformity with the results of studies reported by Schafer and Murphy (9) and others in the U.S.A.

Postexperimental interviews with the subjects revealed that children in all the three groups liked to win (reward) and disliked to lose money (punishment) in the experiment. All subjects thus had similar perceptions of the coins as rewards and punishment in the experiment, but their perceptual organizations were affected differently.

The obtained differences in the perceptions of the three groups may reflect the influence of differing socialization practices on the development of perceptual processes, through the conditioning of attentional processes. The literature on child training practices (4, 8) and reports of the Hindu and the Muslim subjects indicate that there is considerable emphasis on physical punishment as a means of training the children both by parents and by teachers. On the other hand the American children receive predominantly reward-oriented training. The reports of the American children revealed that the type of punishment they generally receive is isolation, withdrawal of privileges, rebukes, etc., and they rarely are punished physically. American parents of course, punish their children, but, in general, Hindu and Muslim parents punish their children more frequently and more severely.

We can only speculate as to why the American children tended to perceive reward-associated aspects and the Hindu and the Muslim, punishment-associated aspects. Solley and Murphy (14, p. 109) argue that "if the individual can avoid the punishment by recognizing the percept as a sign of subsequent pain, he will operate wisely (in the biological sense) by becoming alert to the occurrence of that percept." The attentional processes of children, because of frequent punishments, will so develop that they become very sensitive to stimuli that are associated with punishment or would bring them punishment. Thus, the perceptual emphasis on punished material in the Hindu and the Muslim groups may have been due to the sensitization and conditioning of their attentional processes during the process of socialization, so that they subsequently search and scan their environment and their own actions which are associated with punishment or are likely to bring punishment. This view is similar to one developed by Silverman (12) in connection with attentional processes in schizophrenia. Similarly, the reward-oriented training of the American children may sensitize and condition the attentional processes so that they look for gratifying objects and events in the environment.

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SYMPTOMS OF STRESS IN FOUR SOCIETIES*

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SUMMARY

A questionnaire of 33 items concerning reactions to stressful situations was administered to samples of French, American, Filipino, and Haitian college students. Differences in reported frequency were found for sex, level of industrialization, language, and nationality. Factor analyses of the total sample and of male and female national samples revealed cultural differences in patterns of reaction with French speakers showing different combinations of physical and cognitive disruptions.

A. INTRODUCTION

Contrary to impressions from travel brochures, members of all societies experience situations which cause them to be tense. The autonomic nervous system mediates many bodily changes the pattern of which varies from one individual to another so that no universal characteristic pattern of behavior emerges under stressful conditions. The principle that each individual has his own pattern of responding to stress under quite different stimulus situations (e.g., the reader may sweat a lot but show little change in heart rate) is referred to as individual response stereotypy by Lacey and Lacey (3), and if one's predominant response to stress reaches exaggerated proportions, it can be considered psychosomatic symptom specificity (6). Inasmuch as autonomically mediated responses are subject to both classical and operant conditioning (7), one would expect that symptoms of tension would vary from individual to individual and from one social group to another.

Stern and Higgins (8) found that the perception of one's predominant response to stress—e.g., "I think I am a stomach responder"—clusters within families. Leighton, Lambo, Hughes, Leighton, Murphy, and Mack-

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lin (5, p. 130) have reported that psychosomatic symptoms vary across societies, as well as families and individuals. Wittkower and Lipowski (10) have summarized cross-cultural work in psychosomatic medicine, concluding that although no valid cross-cultural statistics are available, psychosomatic disorders are also common among non-Western and primitive peoples.

In an analysis of the original nine-item somatic perception questionnaire of Stern and Higgins (8), Landy and Stern (4) found three factors: cardiac changes, a sympathetic factor of sweating palms and body, and a third factor of nervous stomach and frequent urination. This analysis demonstrates that perceptions of bodily changes cluster, but it does not deal with differences of clustering from one group to another.

B. METHOD

In this research we are concerned with the frequency and pattern of responses to tension of men and women in four societies: France, Haiti, the Philippines, and the United States. With a questionnaire¹ administered in English and French and with samples drawn from both industrial and traditional societies, we were able to examine, in an analysis of variance design, the effects and interactions of sex, language, and level of industrialization. By factoring the eight samples, we were able to learn something of the clustering of symptoms found in our pairs of samples from each of the four societies. In this way we were able to determine both the frequency and patterning of symptoms which the subjects reported.

The Somatic Perception Questionnaire (SPQ) developed by Stern and Higgins (8) was expanded and administered to samples of male and female college students in the United States and France by Verstraete (9) and to similar samples in Haiti and the Philippines by Deines (1). These samples enabled us to examine differences by sex; language (French in Haiti, and English in the Philippines); and level of industrialization, with U.S. and France as highly industrialized societies. The translation was done by the second author for whom French is the native language and checked with other bilinguals for adequacy of rendition and idiom. The items which were added to the original Stern questionnaire were designed to give a more comprehensive coverage of symptoms of tension, especially with French and Filipino subjects.

The questionnaire was administered to college students in each country, all of whom were in their late teens or early twenties. There were 94 males

¹ Copies of the questionnaire in English and French are available from the first author.

and 102 females from a college 20 miles out of Paris, 91 males and 108 females from Penn State, 119 males and 91 females from two private universities in Manila,² and 112 males and 106 females from a private college in Port-au-Prince, Haiti. The French and Americans were mostly middle class, while the Philippine and Haitian students were drawn from the upper and upper-middle social strata of their societies. These latter two groups were fluent in English and French, respectively, although they may have spoken local dialects in their homes.

C. RESULTS AND DISCUSSION

The results of the analysis of variance, item by item, are presented in Table 1. The differences among the four nationalities are given in the interaction of Industrialization and Language ($I \times L$).

Fifteen of the 33 items show highly significant differences for sex (S); on all 15, women report the symptom more often than men. Item 28, "My mouth is dry," significant at the .05 level, is the sole item which reverses the trend. Eighteen of the 33 items were highly significant for the industrialization (I) factor, with 15 of them showing a higher incidence in the Haitian and Filipino samples. These results do not answer the question whether industrialization enables people to have more practice handling tension, or produces less tension for a society's members. Fourteen items showed significant F ratios for language (L). Items 1, 2, 7, 13, and 21, all physical symptoms, were higher for English-speaking Ss, while the remaining nine items, which the French speakers checked more frequently, dealt with disruptions of mood and thinking. The fact that both sexes, both languages, and both levels of industrialization showed at least some high items argues against an explanation solely in terms of response acquiescence.

There were 15 items with significant F ratios for the I and L interaction, the point in the analysis in which we can consider the four nationalities separately. Two of the 15 items (No. 18, Knot in the stomach; and No. 25, Restlessness) were higher on American and French Ss, while the Haitians were highest on 11, and the Filipinos on two of the remaining items. The other two interactions $S \times I$ and $S \times L$ yielded only three significant items.

Nine separate factor analyses were carried out, one for each sex for each of the four national samples, and a ninth of the entire pooled 823 subjects. With reference to the total sample it was found that six factors, which

² The authors wish to express their appreciation to Dr. Patricia Licuanan, Department of Psychology, Ateneo de Manila University, Manila, Philippines, for her help in collecting the data from Filipino subjects.

TABLE 1
ANALYSIS OF VARIANCE: *F* RATIOS FOR MAIN EFFECTS AND
INTERACTIONS OF SEX (S), INDUSTRIALIZATION (I), AND
LANGUAGE (L) FOR 33 ITEMS OF QUESTIONNAIRE
(*N* = 823)

Item (abbreviated)	Sex	Indust.	<i>F</i> Ratio			
			Language	S × I	S × L	I × L
1. Flushed face	3.22	1.84	9.10*	6.65	.00	9.75*
2. Excess gas	6.35	30.66*	11.17*	2.80	.43	19.90*
3. Cold hands	11.65*	39.03*	37.56*	2.27	1.50	.77
4. Oppressed	5.36	2.88	24.37*	.01	8.87*	2.77
5. Lump in throat	.90	5.80	1.09	2.01	1.00	.21
6. Memory stops	4.37	1.22	.47	2.03	3.96	.23
7. Stutters	1.42	47.78*	8.97*	.02	1.49	1.77
8. Aware of heart beat	19.58*	.22	.54	.66	.00	.28
9. Breath short	.02	23.73*	.03	.33	.03	2.57
10. Diarrhea	6.78*	2.97	5.40	.03	2.36	13.74*
11. Thoughts confused	3.41	15.35*	3.83	1.43	.42	.76
12. Sweaty palms	.34	8.50*	2.62	.05	5.92	.16
13. Heartbeat quick	10.37*	.59	.16	.03	.95	2.35
14. Feels guilty	.00	19.59*	13.72*	.44	1.11	12.34*
15. Urge to urinate	0.41	23.37*	.03	3.20	2.66	6.56
16. Nightmares	20.30*	13.90*	22.29*	.69	.49	5.60
17. Rashes and pimples	.89	21.30*	2.33	4.41	.43	33.15*
18. Knot in stomach	30.63*	29.72*	1.46	.28	.08	8.64*
19. Feels weak	15.29*	45.08*	.10	.82	.30	8.66*
20. Can't concentrate	16.01*	6.81*	4.08	.37	.29	8.29*
21. Body sweat	.93	.20	18.15*	1.29	5.61	2.62
22. Hands shake	17.32*	1.29	5.48	.80	.61	5.97
23. Worries	42.84*	.79	11.85*	1.15	1.94	.02
24. Sighs	12.58*	50.64*	.87	6.80*	.21	3.89
25. Feels restless	20.19*	24.20*	.23	.22	2.56	22.95*
26. Acid stomach	0.48	6.45	6.16	.20	1.18	8.15*
27. Bites nails	.11	.80	10.41*	.45	1.41	28.27*
28. Mouth dry	4.67	.92	1.02	.11	.00	14.14*
29. Trouble sleeping	15.18*	1.87	.03	1.81	.43	5.00
30. Muscle twitches	1.99	53.90*	36.99*	.65	.91	11.69*
31. Headaches	10.94*	29.19*	27.13*	.09	.36	49.47*
32. Feels no good	18.63*	1.03	7.97*	1.67	2.57	.97
33. Feels dizzy	2.15	89.33*	41.94*	6.94*	3.02	42.67*

* $p < .01$.

accounted for 42% of the variance, represented the optimum number because further extraction produced factors with only one variable with a high loading. The six rotated factors were identified as I, *Sympathetic* with symptoms of sweating and of cold hands; II, *Loss of Control* with dizziness, headaches, nightmares, and muscle twitches; III, *Cognitive Disorganization* manifested in poor memory, confused thoughts, and loss of ability to concentrate; IV, *Affective* which involved worry, restlessness, and knots in the stomach; V, *Gastrointestinal* with stomach problems of acid and gas; and VI, *Cardio-respiratory* which consisted of rapid heartbeat and shortness of breath.

The factors from the eight separate analyses were compared with the results from the total group by inspection and by correlating the factor loadings in a 6×48 matrix. Because each factor has a loading for each of the 33 items of the questionnaire, two factors can be compared by computing the correlation between their loadings on the 33 items. Any two factors which have a pattern of high loadings on the same items will be highly correlated. In Table 2 are shown the correlations between the factor obtained from the total group and the factor which was labelled similarly from each of the eight subsamples. We selected one factor from each national sample which was most highly correlated with a given factor from the total sample provided that the correlation was .50 or higher.

Looking across the rows of Table 2 we see that the Sympathetic factor showed up in each sample. Factor IV did not appear by our criterion in any, while the other four factors were each found in five or more of the national samples.

The analysis of the French males' data produced three factors in common with the larger group, the French females, four. The Gastrointestinal factor had no counterpart because Items 2 and 26 dealing with gas and acid were lowly correlated (.07 and .21) in the French samples, compared, for instance, with .69 and .71 in the American data. Items 26, 31, 3, and 18 appear in a factor from the French males' data which is not replicated in other samples and which may represent signs of prolonged, diffuse muscle tension. There are also factors which suggest depression and oppression. All three are organized around affects rather than organ systems. The Gastrointestinal factor which was clearly defined in the data on English-speaking respondents was not found in the French or Haitian data. The

TABLE 2
CORRELATIONS BETWEEN FACTORS FOR TOTAL GROUP AND
SIMILAR FACTORS FROM SUBSAMPLES

Total group	French		American		Filipino		Haitian	
	Male	Fem.	Male	Fem.	Male	Fem.	Male	Fem.
I. Sympathetic	.50	.75	.65	.55	.67	.57	.61	.58
II. Loss of Control		.55		.52	.83	.76	.54	.55
III. Cognitive Disorganization	.60	.81	.66	.80	.51 ^a	.54	.71	
IV. Affective								
V. Gastrointestinal			.78	.72	.57	.76		.50
VI. Cardio-respiratory	.62	.61		.53	.57 ^a	.52	.72	.74

^a One factor from this sample correlated highly with both Factors VI and III.

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analysis of variance reported above indicated that there were differences by language, with English-speaking subjects reporting more physical symptoms, while French-speakers reported more symptoms of mood and thinking. Anecdotal evidence suggests that the French symbolize abdominal distress in terms of their liver rather than their gastrointestinal system; we asked no questions about the liver in our inventory.

The analysis of the Americans' data showed three factors in common with the total group for men, five for women. At .45 the men did not reach the criterion for the Loss of Control factor, while they showed no factor which resembled VI (Cardio-respiratory) with a six-factor solution. A seventh factor proved to be the Cardio-respiratory items (No. 8 and No. 13) with loadings of .79 and .78. Further factoring did not produce a factor which resembled Loss of Control.

The Filipino subjects' data yielded factors similar to five of those of the total group for both men and women. In the case of the men one factor with nine items with loadings above .50 correlated significantly with two of the total group factors. With Items 13, 8, 11, 20, and five others, this factor appeared to be a combination of Factor VI and III from the total group, producing a factor of heart symptoms and difficulties in concentration and memory. When seven factors were extracted from the Filipino males' data, however, the larger factor split into two which resembled very closely Factors III and VI from the total group. This factor and a similarly large one from the Filipino females suggests a different pattern of symptoms of stress than other samples have shown. The Loss of Control factors correlate .85 between the sexes and a .83 and .76 with the general factors. This is in keeping with the general emphasis in Philippine society on maintaining self-control (2).

The Haitian samples showed generally lower correlations than the Filipino except on the Cardio-respiratory factor which was quite clearly defined. In contrast, their reports of gastrointestinal responses were scattered across several factors. This is similar to their French-speaking counterparts, which suggests that we might examine the subtleties of the translation, as well as characteristic patterns of psychophysiological responses.

These results suggest that while the patterning of psychophysiological responses varies from one society to another, there are similar constellations across societies. The variability may arise in part from figurative language by which people describe many of their experiences. Similarly, different societies emphasize different organ systems. Filipinos, especially women, had a large clustering of cardio-respiratory symptoms, while

Americans had a large cognitive disorganization factor, with these emphases inferred from factors which accounted for much more of the variance than other factors.

The failure of Factor IV to appear in any of the national samples is surprising. It does suggest that pooling data from many samples may obscure the qualities of each separate sample. Possibly more items in the domain of affect were needed.

Factor II, which we have called Loss of Control, appears to be much more clearly defined in our four female groups. It would appear that in certain societies it may be less socially acceptable for males to admit and experience this constellation of symptoms.

The items with high communalities include 8 and 13 which deal with heartbeat symptoms, and 2, 28, and 16 which tell of stomach symptoms. In contrast to these specific organ related symptoms are Items 1, 5, 10, 24, and 28 which report more peripheral problems, and which have the lowest communalities. Factors unique to various samples showed mixtures of pains, distorted physical processes, and unpleasant ideas.

D. CONCLUSIONS

Analyses of variance of items dealing with common symptoms of tension showed that women report more phenomenological and somatic indications of stress and that members of industrialized societies report fewer than a sample from developing countries. The clustering also varies, for while almost all groups reported clusters of sweating and cold extremities, and of cardio-respiratory changes, speakers of French did not show a factor for the gastrointestinal symptoms included in our list. In the behavioral domain we found a cognitive disorganization factor, particularly the inability to think clearly, and a factor which revolved about the loss of control of some bodily processes. These data do not tell us about differences in sources of tension from one society to another, but they indicate that, in spite of a common autonomic nervous system, there are differences in the reported physical and phenomenological reactions which are manifested by different groups of people.

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THE EFFECTS OF AGGRESSIVE AND ALTRUISTIC MODELING ON SUBSEQUENT BEHAVIOR*

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SUMMARY

In order to assess the effects of exposure to an aggressive or altruistic model and the stability of aggressive and altruistic behaviors across situations, 120 male and female shoppers were randomly assigned to five treatment conditions. Although there was no difference between Ss interacting with the same or different experimenter as the model, those exposed to an aggressive model behaved significantly more aggressively in the first situation. No effect of observing an altruistic model was found, nor were there any differences in responses to the second situation by Ss who had been in different treatment conditions. However, those who were altruistic or aggressive in the first situation tended to be more altruistic or aggressive in the second one.

A. INTRODUCTION

The recent growth of interest in the area of social learning theory and modeling (1, 4) has been particularly apparent in the areas of aggression (2, 3) and altruism (8, 26). A number of studies have demonstrated in both laboratory (7, 14) and field experiments (18, 19, 20) with children (5) and adults (6), using live (18, 19), videotaped (5), telephone (20) and written (12) models, that Americans exposed to an aggressive model tend to be more aggressive than those exposed to a neutral one or to no model. Similarly, adults (24) and children (8) in laboratory (15, 16) and field experiments (25) have responded more altruistically after being exposed to a live (15, 16) or videotaped (9) altruistic model. Only one study, however, has attempted to assess the effects of exposure to an aggressive or altruistic

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model in the same field situation (21). Subjects saw a model either berate or assist an experimenter who dropped IBM cards at the feet of the model and subject; although a slight aggressive modeling effect was demonstrated, no effect of an altruistic model was found in that situation.

A second issue also considered both in the present study and in the Harris, Liguori, and Joniak study is the question of the relationship of behavior in one situation to that in another. Although Harris, Liguori, and Joniak found no significant differences between treatment groups in their response to a second confederate who asked them for a dime, there was a nonsignificant trend for people who assisted the first experimenter in picking up the cards to donate to the second confederate. Since Freedman and Fraser (13) and Harris (17) had previously found tendencies for subjects requested to perform an altruistic act in one situation to be more altruistic subsequently, it seemed worthwhile to see whether this would also be true in the present study, as well as to ascertain whether or not the effect of observing an altruistic model persists into a second situation. Moss and Page (28), for instance, found that negative reinforcement for helping in one situation did depress the rate of helping in a subsequent situation. In addition to observing altruistic behavior, the relationship of treatment condition and aggressive behavior in one situation to aggressive behavior in a second situation was also investigated in the present study. By providing *Ss* with an aggressive or altruistic model and then giving them two apparently unrelated opportunities to be either aggressive or altruistic (or even both), not only the stability of these behavior tendencies but also the relationship between aggression in one situation and altruism in another (or *vice versa*) could be examined. With experimental condition held constant, it could be the case, for instance, that those who are aggressive or altruistic in one situation are subsequently more aggressive or altruistic in a second situation, suggesting either that a stable behavioral predisposition exists or that one's behavior in one situation changes his self-concept (13) or the salience of social norms demanding such behavior (17) and thus leads him to behave similarly in the second situation. Alternately, aggressive behavior in one situation could cause either catharsis (11) or guilt, making a person subsequently less likely to be aggressive and more likely to be altruistic. Similarly, altruistic behavior could cause one to feel as if he has done his good deed for the day and thus to be subsequently less altruistic and more aggressive; this latter possibility seems less likely, since it would contradict the results of Freedman and Fraser (13) and Harris (17).

A final issue investigated in the present study was the question of

whether a subject would be more or less likely to imitate a model if the recipient of his altruistic or aggressive deeds were the same as or different from the person with whom the model interacted. A simple matching-to-template explanation of the modeling process, which most social learning theorists (1, 4) feel is an inadequate interpretation of the modeling process, would suggest more imitation of both altruism and aggression towards the same individual with whom the model interacted. A normative theory might lead to a similar prediction, since the model's actions would be seen as an informative cue that the particular individual is a worthy and appropriate recipient of altruism or aggression. On the other hand, a more cognitive approach might predict less altruism towards the same individual than towards a different one, because someone who has already been helped by the model would presumably need additional help less than someone who has received no prior help. Similarly, if the model has aggressed against a particular individual, the observer might be less likely to aggress against him than against a second individual who had not previously been the victim of aggression or "got what he deserved." Such an explanation might account for the results of Harris (18), in which two experiments in which *M* and *S* aggressed against different victims showed a modeling effect, but a third one, in which *S* would have had to aggress against the person previously attacked by *M*, did not.

The present study, therefore, exposed male and female *Ss* to either no model, an aggressive model, or an altruistic model, with half of the *Ss* in each of the latter two conditions approached by the same confederate who approached the model and half approached by a different confederate. After their aggressive and/or altruistic behaviors in this situation were coded, *Ss* were approached by another experimenter and again given an opportunity to be aggressive and/or altruistic. For all *Ss*, the first situation involved asking them to fill out a questionnaire on ecology, and the second situation involved asking them for a dime. Filling out the questionnaire and giving the dime were the two indices of altruism; verbal and nonverbal aggressive responses were also assessed.

B. METHOD

1. *Subjects and Researchers*

Subjects were 60 adult males and 60 adult females at two large shopping centers who were unaccompanied and carrying no packages or objects. All potential subjects who met these constraints and were walking in the

direction of the experimenter (*E*) were used as subjects and randomly assigned to treatments. The researchers were male graduate students in their twenties, of average appearance and neatly dressed. One researcher always served in the role of *E*, one in the role of confederate (*C*), and the other two served in the roles of model (*M*) and different experimenter (*D*).

2. Design

Subjects were randomly assigned to one of five conditions: No Model (*NM*); Altruistic Model—Same *E* (*Alt-S*); Altruistic Model—Different *E* (*Alt-D*); Aggressive Model—Same *E* (*Agg-S*); or Aggressive Model—Different *E* (*Agg-D*). Twelve males and 12 females were assigned to each condition, making a 5×2 factorial design. In Phase I of the study, *Ss* were asked to fill out an ecology survey by *E* after being exposed to one of the treatments; in Phase II all *Ss* were treated identically and were asked for a dime by *C*.

3. Procedure

In the No Model condition, as a subject walked near *E*, who was standing in the midst of a shopping center holding a clipboard, he (she) was asked politely by *E*, "Excuse me Sir (Madam), would you fill out a survey form on the ecology issue?" *Ss* could see, by glancing at it, that the form consisted of only a few short questions. If *S* refused the form or walked by, *E* said nothing else; if he accepted and filled out the form, *E* said "Thank you." His acceptance or refusal and his verbal and nonverbal aggression were then coded by *E* according to the system described below. Answers to the survey were also analyzed for those who responded.

After *S* had walked on about 10 yards, he was then stopped by *C* and asked politely, "Excuse me, could you give me a dime?" (a request quite common in Albuquerque). *Ss* who ignored *C* or refused were not addressed further; those who gave him a dime were thanked and then handed back the money with the explanation, "I'm sorry, I forgot that I had some change in my coat pocket." Four *Ss* refused to take the money back, and it was later donated to the Salvation Army. *C* then coded whether *S* refused to give him money, searched for coins but could not find any, or did donate to him. *S's* verbal and nonverbal aggression were also coded, as in Phase I.

In the other four conditions, *M* began walking unobtrusively toward *E* a few yards in front of *S*, so that *S* would be in a good position to view what happened to *M*. In the *Alt-S* and *Agg-S* conditions, *E* asked *M* to fill out

the survey; in the Alt-D and Agg-D conditions, the different experimenter asked *M* to fill out the survey. In the Agg-S and Agg-D conditions, *M* replied in an aggressive tone, "You've got a lot of nerve bothering me with that stuff!" and walked off, not taking a questionnaire. In the Alt-S and Alt-D conditions, *M* replied in a pleasant tone of voice, "Sure, I'd be glad to" and filled out the questionnaire. *S* was then asked by *E* to fill out the survey and from that point treated exactly like *Ss* in the NM condition.

4. *Material*

The survey consisted of 5" by 8" pieces of paper with four questions thereon: "Are you in favor of the Trans-Alaskan pipeline? Should the federal government give financial support to local ecology programs? Is the State of New Mexico doing an effective job in cleaning up the environment? Do you feel that surveys of this nature have any value?" and a space for comments. Alternatives for the first three questions were "yes" and "no"; for the last one, they were "valuable," "no opinion," "not valuable," and "waste of time." In addition, *E* and *C* each had a score sheet which they filled out on each *S* as soon as he left, which indicated his degree of verbal and nonverbal aggression.

5. *Scoring*

Altruistic behavior in Phase I was originally divided into four categories: refuses to take a questionnaire, takes one but returns it blank, takes one and partially fills it out, or takes one and fills it completely out. However, since the two middle categories were so rare, the data were divided dichotomously into those who refused to fill out a questionnaire and those who did fill it out. Altruism in the second situation was also scored dichotomously, being divided into those who gave *C* money or looked for it, and those who refused or ignored *C*.

Verbal aggression was rated on a four point scale from polite (0 points); to neutral or no responses (+1); somewhat aggressive, defined as a brief, nonobscene remark indicating displeasure (+2); or very aggressive, defined as a lengthy, insulting, or obscene remark (+3). Nonverbal responses which occurred were simply checked by *E* or *C* and later summed to give a nonverbal score. The behaviors and their point values were smile (-1), glare (+1), rude gesture (+1), and push or shove (+1), making a potential range of scores from -1 to +3. An additional point for nonverbal aggression was added to the score of one woman, who shot *C* in the face with an

aerosol spray; no one else displayed this behavior. In addition, *E* and *C* wrote down *S*'s exact words and any unusual behaviors he performed. Both *E* and *C* used the same form for recording behavior.

Total aggression scores in Phase II were constructed by summing the scores for verbal and nonverbal aggression. In Phase I, scores from the last question of the survey were added to verbal and nonverbal aggression scores to form total aggression, with a favorable opinion scored as -1 , a neutral opinion or no response scored as 0 , an unfavorable opinion scored as $+1$, and an aggressive open-ended comment scored as $+2$.

6. Reliability Check

After discussing and practicing the use of the scoring system, *E* and *C* independently rated the responses of 12 male and 12 female pilot *S*s in Phase I of the study. The percentage of agreement on nonverbal aggressive responses was 92%, and the correlation between their ratings of verbal aggressive responses was $+.86$ ($df = 22$, $p < .001$). Perfect agreement was found on the measure of accepting or refusing the questionnaire and on rating the *S*'s actual questionnaire response. Because handing the *S* a dime or not was a completely objective occurrence, no reliability checks of that measure were made.

C. RESULTS

1. Phase I

The dichotomous measure of altruism, filling out the questionnaire or not, was analyzed through chi-square techniques, with the use of Yates's correction for all 2×2 tables. No significant sex effect appeared ($\chi^2 = .533$, $df = 1$), but a significant treatment effect was found ($\chi^2 = 11.470$, $df = 4$, $p < .05$), with 29% of *S*s in the Agg-S, 38% of those in the Agg-D, 54% of those in the Alt-S, 63% of those in the Alt-D, and 71% of those in the NM condition altruistically agreeing to fill out the survey. Collapsing across the same and different categories, the difference in percentages taking the questionnaire in the aggressive, altruistic, and no model conditions was even more significant ($\chi^2 = 10.80$, $df = 2$, $p < .01$); the altruistic and no model conditions did not differ, however ($\chi^2 = .488$, $df = 1$).

The measures of verbal, nonverbal, and total aggression were analyzed by 5×2 analyses of variance. Males showed significantly more verbal ($F = 9.37$, $df = 1/110$, $p < .01$), nonverbal ($F = 17.07$, $df = 1/110$, $p < .001$), and total ($F = 7.65$, $df = 1/110$, $p < .01$) aggression than females; however, there were no sex by treatment interactions (all F s < 1).

The mean verbal, nonverbal, and total aggression scores for Ss in the five treatment conditions are presented in Table 1. With $df = 4/110$, significant treatment effects were found for verbal ($F = 6.891, p < .01$), nonverbal ($F = 13.750, p < .001$), and total ($F = 9.479, p < .01$) aggression. For all three measures, *post hoc* Scheffé analyses revealed no significant differences between the Agg-S and Agg-D groups (all F s < 1) or between the Alt-S and Alt-D groups (all F s < 1). Nor did the combined altruistic groups differ from the NM condition (all F s < 1). However, the Ss in the combined aggressive conditions showed significantly more verbal ($F = 19.13, p < .01$), nonverbal ($F = 27.88, p < .001$) and total ($F = 19.52, p < .01$) aggression than did those in the NM condition. Similarly, they also showed significantly more verbal ($F = 45.90, p < .001$), nonverbal ($F = 18.62, p < .01$) and total ($F = 32.41, p < .001$) aggression than Ss in the combined altruistic model conditions.

2. Phase II

The 22 Ss who gave C a coin did not differ from the nongivers in terms of sex ($\chi^2 = 2.727, df = 1$) or experimental condition ($\chi^2 = 3.673, df = 4$), nor did they when the same and different categories were combined ($\chi^2 = 1.169, df = 2$). The 5×2 analyses of variance revealed no significant sex, treatment, or interaction effects on either verbal, nonverbal, or total aggression.

3. Phases I and II

A chi-square analysis indicated that Ss who filled out the survey in Phase I were significantly more likely to donate to C in Part II than those who refused to do so ($\chi^2 = 4.150, df = 1, p < .05$), indicating some stability of altruistic behavior across the two situations. Combined across all Ss, the verbal ($r = .208, df = 118, p < .05$), nonverbal ($r = .730, df = 118, p < .001$), and total ($r = .256, df = 118, p < .01$) aggression scores in Phases I

TABLE 1
MEAN VERBAL, NONVERBAL AND TOTAL AGGRESSION SCORES IN PHASE I CONDITION

Measure of aggression	Agg-S	Agg-D	Alt-S	Alt-D	NM
Verbal	1.083	1.250	.542	.583	.412
Nonverbal	.375	.542	-.542	-.375	-.417
Total	1.250	1.375	-.458	-.292	.272

Note: Agg-S = aggressive model, same E; Agg-D = aggressive model, different E; Alt-S = altruistic model, same E; Alt-D = altruistic model, different E; NM = no model condition.

and II were also significantly correlated. Although not all statistically significant, the total aggression scores in Phases I and II were positively correlated for all the major subgroups of the study: men ($r = .208$, $df = 58$, $p > .10$), women ($r = .254$, $df = 58$, $p < .05$), and those in the aggressive model ($r = .320$, $df = 46$, $p < .05$), altruistic model ($r = .038$, $df = 46$, $p > .10$), and no model ($r = .427$, $df = 22$, $p < .05$) conditions, again suggesting some stability of aggressive behavior.

D. DISCUSSION

The results of observing an aggressive model in the present study confirm the results of numerous laboratory experiments and extend the meager research on field experiments in aggression to a new paradigm. However, although a clear modeling effect for aggression was found, no such effect of observing an altruistic model appeared in the present study. Although most field studies on modeling altruistic behaviors have dealt with such activities as donating to charity (25), helping a stranded motorist (10), volunteering for an experiment (29), or returning a lost wallet (24), the differences between these studies and the present situation are not clear enough to lead to an obvious explanation of the failure of an altruistic model to have an effect. One possibility is that *S*s in the previous situations had to volunteer actively to help, rather than simply assent to a direct request. An exception was the study by Rosenbaum and Blake, in which helping the *E* obviously required the effort of leaving the room. Perhaps, as the effort required to initiate an altruistic response increases, the influence of a model becomes stronger.

The lack of long term effects of observing a model contradict the findings of Hicks (23), who found retention of modeled aggressive acts over a six-month period. However, Hicks' study was in a laboratory situation with children and used distinct aggressive behaviors, whereas the present experiment was in a naturalistic setting with rather typical aggressive behaviors and did not measure learning but only performance. The lack of consistency between these results and those of Hicks is, therefore, not surprising.

Although treatment effects did not persist into Phase II, there was significant stability of altruistic and aggressive behavior in the two phases. It is possible that the "thank you" given to those who helped in the first situation served as a reinforcer for generalized altruism, but it is equally likely that performing one altruistic act changed *S*'s self-concept and made him therefore more likely to perform a second one (13) or that there is a

weak general predisposition to altruistic behavior, suggesting that people who are altruistic in one situation tend to also be so in another, contrary to the general conclusions of Hartshorne and May (22). Certainly, the results, like those of Harris (17), contradict the "Boy Scout hypothesis" that one good deed a day, certified by a thank you, is enough to win points toward a merit badge.

The positive correlation between aggressive behavior in Phases I and II appeared within subgroups, as well as in the total sample, suggesting either that unpunished aggressive behavior is self-reinforcing, that behaving aggressively in one situation changes one's self-concept and makes one subsequently behave more aggressively, or that a generalized trait of aggressiveness does exist in humans. Certainly, it contradicts either a catharsis (11) or a guilt hypothesis, which would suggest that performing one aggressive act would reduce instigation to a second one.

In summary, increased aggression after viewing an aggressive model in a novel naturalistic paradigm has been demonstrated, although exposure to an altruistic model did not serve to increase altruism. Although there were no differences between Ss in different treatment conditions in the second phase of the study, those who had previously been altruistic continued to be so and those who were more aggressive in Phase I were also more aggressive in Phase II. Such stability of behavior, although weak enough not to contradict those who feel that human behavior is situation specific (27), suggests either that performing one act changes a person's self-concept and makes him more likely to behave similarly in the future, or that individual response predispositions do indeed remain stable across situations close together in time.

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RESPONSE TO ALTRUISTIC OPPORTUNITIES IN URBAN AND NONURBAN SETTINGS*

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SUMMARY

A field experiment utilizing three dependent measures was conducted to test the generality of the urban incivility hypothesis: interaction between strangers is less civil, helpful, and cooperative in an urban environment than in a nonurban environment. One hundred sixteen field situations were enacted in Boston and in several small towns in eastern Massachusetts and involved requests for assistance by a wrong-number phone caller, overpayments to store clerks, and "lost" postcards. For each measure, the likelihood of help was greater in the nonurban than in the urban locales.

A. INTRODUCTION

The present study was designed to test the generality of the "urban incivility" hypothesis, which states that the interaction between strangers is less civil, helpful, and cooperative in urban environments than in nonurban environments. Such a difference is suggested by many urban analysts who have attributed urban incivility to such factors as the excessive pace and stimulation of the city (2), role segmentation, and the decline of primary ties (3), and "input overload" (1). Empirical studies by Milgram (1) have demonstrated the greater helpfulness and trust shown by country than by city dwellers when faced with a wrong-number caller needing assistance or a stranger at the door asking to use the telephone. The generality of urban-nonurban differences in helpfulness was tested in this study by using locales different from Milgram's and by using different, multiple dependent measures which included both "demand" and "non-demand" forms of helpfulness: i.e., helpfulness can occur in response to a request for help or it can occur in a nondemand situation where the person needing help may not even realize it.

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B. METHOD

A female experimenter (the second-author) administered the dependent measures in several field settings located in Massachusetts. The independent variable was created by using two categories of field settings: urban (various locations throughout Boston) and nonurban (various small towns in the Cape Cod area and eastern Massachusetts). For each dependent measure, half the data were collected from subjects in each of the two categories of field settings. Three dependent measures were used: (a) wrong number—40 randomly selected subjects were called on a wrong number basis and, on the pretext that the caller had no more money, were requested to call the intended party with an important message; (b) overpayment—40 store clerks were given excessive change for small purchases by the experimenter, who laid the money down as an apparent exact change payment, then left the store slowly, giving opportunity for the clerk to correct the overpayment; and (c) lost postcard—36 stamped, addressed postcards bearing an important message were distributed in several easily noticeable places, as though "lost" by the sender.

C. RESULTS

For all measures, greater helpfulness was found in the nonurban settings than in the urban settings. A four-point scale of helpfulness for the wrong number measure showed a tendency for nonurban persons to render greater assistance than urban persons contacted (2.9 *vs.* 2.4; $t = 1.49$, $p < .10$, two-tailed). Nonurban store clerks also showed a slightly greater tendency (80% *vs.* 55%) than their urban counterparts to return the overpayment, again a marginally significant difference ($\chi^2 = 2.84$, $p < .10$). Finally, the return rate of the "lost" postcards was higher in the nonurban settings (78% *vs.* 61%), though this difference did not reach statistical significance ($\chi^2 = 1.18$). Overall, however, the likelihood of offering assistance to the stranger in need was clearly higher in the nonurban than in the urban settings—78% *vs.* 55% ($\chi^2 = 5.5$, $p < .02$). These data provide some confirmation of the "urban incivility" hypothesis and tend to demonstrate the impact of an environmental factor—urban *vs.* nonurban setting—on the response to a stranger needing assistance.

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DEPENDENCY, THREAT, AND HELPING IN A LARGE CITY*

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SUMMARY

The concept of a social responsibility norm was supported by an experiment designed to elicit signatures under three dependency conditions. Increasing dependency elicited greater numbers of signatures and, at the highest level, overrode a threatening request for phone number. The data, obtained in a large urban area, matched data obtained in a smaller community and may therefore cast doubt on the idea that people in large cities are more heartless than people in smaller ones.

A. INTRODUCTION

In an experiment designed to deal with the effects of dependency, threat, and sex interaction on helping behavior Harris and Meyer (1) achieved significant results supporting the idea of a social responsibility norm among members of an American community, since increasing dependency of *E* resulted in greater helping, despite the threat of future contact. Since the size of the community is believed to affect the degree of helping (2) this study was repeated in a large urban area.

B. METHOD

Six signs were used requesting signatures under three conditions of dependency and two of threat. Their exact wording can be found in Harris and Meyer. The experiment was performed outside the Metropolitan Museum of Art in New York City on Saturday and Sunday afternoons and under similar weather conditions. Care was taken to display the signs in areas of roughly equal population on both days. Each sign was exposed twice for 10 minutes. The trials were randomized. The ability of *E* to pass a course was related to the signatures obtained as the dependency condition. The threat condition was a request for phone number and the non-threat condition a request for favorite color. Since originally no significant results were found by using *E*'s of different sex, this was omitted, but the

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sex of *S* was noted. This was important because Schopler (3) and others have emphasized the possibility of helping as a threat to status, especially in regard to males helping other males.

C. RESULTS

A total of 40 males and 46 females signed. A chi-square analysis was used. No attempt was made to count the number of people who did not sign, this being impossible. As in the original study, the degrees of freedom used were those for a complete chi-square table which included cells for the nonsigners, reducing the probability of reaching significance. More people signed under high dependency than low dependency ($p < .001$). Fewer people signed under high threat ($p < .01$) except in the case of high dependency which tended to outweigh the threat. There was a significant difference between the threat conditions under moderate dependency ($p < .01$) and low dependency ($p < .005$). For males threat did not significantly affect their behavior although more signed under low threat. For females the threat significantly reduced signing ($p < .05$). For both males and females the dependency conditions significantly influenced helping behavior ($p < .01$ and $p < .005$, respectively). These results matched those of Harris and Meyer in all important respects.

The successful interrelationship of dependency and the number of signatures supports the notion of a social responsibility norm. This opposes the concept of reactance and threat to status as proposed by Schopler and others. Although threat had an effect, a strong dependency overrode it. Finally, contrary to Merrens' conclusion, the similarity of results of the two experiments may cast doubt on the idea that people in larger cities are more heartless than people of smaller urban areas. However, the nature of the helping behavior and environmental factors other than the size of cities may yield different results.

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WOMEN, EMINENCE, AND CAREER-VALUE RELATIONSHIPS*¹

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SUMMARY

Information on 270 women and 270 men was taken from the 1972-1973 edition of *Who's Who* and compared with data from a 1956-1957 sample, in which occupations were grouped according to value definitions in the Allport-Vernon-Lindzey *Study of Values*. Although more women are now listed in careers which relate to men's highest ranked values (Theoretical, Economic, and Political), the largest group of women are still in occupations which relate to a value most highly esteemed by women (Aesthetic). The only masculine category in which the ratio of women to men shows a significant increase is Economic. While merely 6% of the eminent men have not married, 38% of the eminent women are unmarried, and those who married have fewer children than the men.

A. INTRODUCTION

Despite the fact that the median educational level has been higher for women than men in professional and technical occupations, few women have attained high-status positions (6). Women now comprise 40% of the entire labor force, but only 8% of the nation's physicians are women, 4% of its lawyers, 5% of its physical scientists, and 12% of its social scientists.

Why are not women succeeding as well as men? Research has uncovered a multiplicity of suggested causative factors varying from social barriers, biological predispositions, and child rearing practices, to male attitudes and structure of the economy. Conclusions from a study of *Who's Who* listings for 1936 and 1956 indicated that sex differences in values may be responsible for the paucity of women in prestigious positions (10). Smith's analysis of the occupations of men and women suggested that it was easier to gain such recognition if one followed a career which was associated with

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values most highly regarded by men—that is, theoretical, economic, and political values—as opposed to values highly ranked by women—social, aesthetic, and religious.

In view of the importunity of the women's liberation movement which ballooned in the sixties, it seemed reasonable to assume that there might presently be a measurable increase in the proportion of women who are finding a strong measure of success in "men's" fields. In order to assess changes over time as precisely as possible, Smith's procedures were followed for this study.

B. METHOD

From the 1972-1973 *Who's Who in America* the names and occupations of 270 men and 270 women were taken together with birthdates, marital status, and number of children. Every tenth page was examined, and each woman and the man most immediately following her were selected for the study. Only those on whom all of the desired information was available were included. Because the search through both volumes of the 1972-1973 edition did not yield the requisite sample, every fifth page was examined until the 540 total was obtained.

Occupations of both sexes were then grouped by criteria established in Smith's study, which categorized occupations according to the Allport-Vernon-Lindzey *Study of Values* (1). Occupations were listed under the value most likely to be ranked highest by those who pursued such careers: Theoretical, Economic, Aesthetic, Social, Political, and Religious. Smith grouped some educators and editors separately because it was not always clear in *Who's Who* what the special field was; in the 1972-1973 sample, most educators provided double listings, as "Educator, Psychiatrist," or "Educator, Engineer." Remaining in the separate education category in this study were those identified only as educators; and as in Smith's study, educational administrators were listed under the political value, and teaching nuns under the religious value.

Data were compared with findings from the earlier study by (a) examining changes in the distribution of women across value categories, (b) testing by chi square the significance of differences in ratio of women to men within categories; and, (c) assessing the number who married.

C. RESULTS

The distribution of women across value categories changed markedly on three of the six Allport-Vernon-Lindzey values while men changed mainly

in Theoretical (Table 1). Women in occupations within the Theoretical category increased from 8.9% to 23%; 9.6% are now in the Economic category as compared with 2.6% in the earlier study; and, only 2.6% in the present study are in the Social category, a drop from 16.7% in 1956-1957. Virtually unchanged, however, are the Aesthetic occupational group, which still holds the largest percentage of women, and the Political. Although the Religious category includes fewer women in the seventies, the very small percentage of persons in this group in both studies precludes generalizations about fluctuation in number.

In sum, the majority of eminent women today, as in earlier samples from *Who's Who*, continue to be attaining recognition in occupations which are associated with values most highly esteemed by women, and the majority of men are found in occupations associated with values most highly esteemed by men.

When data on the 1956-1957 groups in masculine value categories were tested by chi square with the 1972-1973 groups, there were no significant changes in the ratio of women to men in Theoretical and Political values. Only the Economic category showed a significant ($p < .01$) increase in the ratio of women to men in a male value category (chi square = 9.52).

Marital status of the women in both samples is approximately the same. Smith found that although only 60% of all the women had married, 86% of the women authors were married. Similarly, 62% of the women in this study had married, as had 84% of the women authors. Further analysis of the 1972-1973 information showed that of women in occupations with values most esteemed by women, 75% had married, whereas only 47% of the women in occupations related to men's values had married. In contrast to the women, 94% of men in the 1972-1973 group had married.

Data on ages of listed persons and number of their children were not reported in the earlier study, but they were included in this study in view of questions recently raised relative to child rearing and options on career commitment (7). Age distribution of men and women is surprisingly similar, with a few women both older and younger than the men. The younger women appeared in the Aesthetic occupations (usually the performing arts). Eleven percent of the women and 8% of the men are over 82; 25% of the women and 26% of the men are between 73 and 82; 33% of the women and 34% of the men are between 63 and 72; 16% of the women and 24% of the men are between 53 and 62; and 15% of the women and 8% of the men are under 53. Although only 8% of the men in this study are childless, 59% of the total sample of women have no children, and those who have children

TABLE 1
OCCUPATIONS OF MEN AND WOMEN IN *Who's Who* LISTED IN VALUE CATEGORIES

Values	1972-1973				1956-1957			
	Men		Women		Men		Women	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Theoretical	81	30.0	62	23.0	50	18.5	24	8.9
Engineers	13		5		9		0	
Medical profession	20		9		16		11	
Social scientist	21		32		3		5	
Other scientists	27		16		22		8	
Economic	75	27.8	26	9.6	83	30.7	7	2.6
Aesthetic	30	11.1	101	37.4	32	11.8	103	38.2
Artists and sculptors	6		18		12			
Authors and writers	17		40		15			
Performing artists	7		43		5			
Social	00	00	7	2.6	4	1.5	45	16.7
Political	63	23.3	39	14.4	66	24.4	38	14.1
Army and Navy	3		2		2		1	
Educational			16		17		11	
administrators	15		8		32		5	
Legal profession	28							
Diplomats, government								
officials, politicians,								
etc.	17		13		15		21	
Religious	6	2.2	5	1.9	6	2.2	10	3.7
Education (unknown field)	12	4.4	24	8.9	22	8.1	27	10.0
Miscellaneous	3	1.1	6	2.2	7	2.6	16	5.9
Pilot	0		1		0		0	
Publisher	3		5		7		16	

Note: Data for 1956-1957 sample is from M. E. Smith (10, p. 342).

have fewer than the eminent men. Of those who married, 8% of the men and 21% of the women have one child; 33% of the men and 21% of the women have two; 27% of the men and 13% of the women have three; 15% of the men and 8% of the women have four; and 8% of the men have five or more children, while only 3% of the women have more than four.

D. DISCUSSION

There appears to be a trend for fewer eminent women to be involved in activities which reflect primarily an altruistic or philanthropic love of people (Social value), and for a greater number of eminent women to be in pursuits which men value strongly—discovery of truth (Theoretical) and practical affairs of the business world (Economic).

Over the past 16 years, however, there has been no observable increase in women who are eminent in occupations which are related to Political, Aesthetic, or Religious values; and most women listed in *Who's Who* continue to be in occupations which relate to values most highly esteemed by women—in spite of the 14% drop in the (feminine) Social category. Although it might be interpreted that these conclusions reflect a pre-women's-protest orientation, findings support recent evidence that gifted American women, while urged to "perform with the times," are persisting in their old patterns, and still show a preference for occupations in areas defined as feminine by the Strong Vocational Interest Blank (9).

Even though the Economic category represents merely 10% of the women, it is of interest to note that *business* is the area of masculine values which showed a statistically significant increase in the ratio of eminent women to men. It might be speculated that as secretaries, aspiring women may have greater access to prestigious positions by demonstrating proficiency in business management than is possible in their role in Theoretical and Political occupations. However, in this context, it is of further interest to observe that although female lawyers represent only 4% of the lawyers nationwide, they comprise 20% of the legal profession listed in *Who's Who*. Similarly, 31% of the physicians in this study were women, while only 8% of the nation's medical profession are women; and 45% of the eminent social scientists are women, yet women account for only 12% of the nation's social scientists. Again it is found, as in previous studies, that women who compete successfully in "masculine" occupations perform at exceptional competency levels (2, 3).

That there is considerable discrepancy between the percentages of these eminent men and women who married is not surprising. Etaugh (5) found

that professional men held negative attitudes toward the dual role of married professional women, and Roe (8) noted that 73% of a group of professional men but only 39% of the professional women regarded marriage as an asset to their career.

The relationship of children and success in a career was as might be expected. It remains particularly difficult for women to rear children and achieve highly in areas historically regarded as men's fields of endeavor. Marriage and family may continue to conflict with women's career aspirations, at least for the generation approaching maturity now. Entwistle and Greenberger (4) found in their recent study of adolescents' views on women's work role that although middle class girls were positive toward considering career and family, middle class boys, with high *IQ*, were consistently negative about married women working outside the home.

Careers in occupations which reflect men's most esteemed values must still be viewed as high risk for gifted women, who, while more readily finding acclaim than their sisters with more feminine values, will continue to be pressed to choose between career commitment and marriage and family.

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A RECONCEPTUALIZATION OF THE PERMANENCE OF ATTITUDE CHANGE*

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SUMMARY

Two levels of *audience*, *commitment*, *choice*, and *time* were varied in a $2 \times 2 \times 2 \times 2$ repeated measures factorial design in an attempt to examine the effects of these variables on attitude change both inside and outside the laboratory. *Commitment* and *choice* had no effect on attitude change. *Time* had a significant effect ($p < .001$), with a large amount of change occurring immediately after the experimental manipulation and very little change occurring three weeks later. *Audience* and *time* also produced a significant interaction ($p < .01$), with a large amount of attitude change occurring in the *audience condition* immediately after the manipulation and very little change three weeks later. In the *no audience condition* some attitude change occurred immediately after the manipulation, but little change remained three weeks later. These findings were interpreted within the framework of Katz's classic conception of an attitude, and it was argued that pressure on the conative dimension of an attitude was not sufficient to produce permanent attitude change. Furthermore, it was hypothesized that additional pressure on the conative dimension would be required to produce change when the attitude was salient and that this change would not be permanent unless the other dimensions of the attitude were also affected. Finally, it was noted that many studies employ nonsalient attitudes where pressure on the conative dimension alone may be sufficient to produce change.

A. INTRODUCTION

Most theories of attitude change, as well most attitude change studies, have assumed that the attitude change produced by manipulation would be relatively permanent. However, this assumption has seldom been tested

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empirically. One of the few empirical investigations of this assumption led to the discovery of the "sleeper effect" (5). This type of follow-up research is rare, and has never been carried out with the use of a counterattitudinal paradigm.

One of the most commonly employed paradigms in attitude change studies of American subjects is the counterattitudinal argument. The use of this paradigm has resulted in the identification of a number of factors which appear to be related to the attitude change process. The significance of these factors has come to be realized as a result of the continuing controversy between cognitive and environmental theories of attitude change. Four of the more frequently mentioned factors are reward, commitment, volition, and audience. Reward has been viewed in these studies as helping to produce dissonance, which in turn produces attitude change. Commitment has been defined by Kiesler and Sakamura . . . (7, p. 349) "as a pledging or binding of the individual to a behavioral act." One way of producing this effect is to make it appear to an individual that he has taken responsibility for his actions by becoming personally associated with the act. Volition can be viewed as having the opportunity to choose whether or not one will become personally responsible for specific behavioral actions. Experimentally, this is accomplished by giving an individual a choice of performing or not performing a behavioral act. Finally, audience has been viewed as performing a behavioral act in front of a group of people.

The fact that reward could influence attitudes was demonstrated by Festinger and Carlsmith (4) in a study showing small amounts of money produced greater attitude change than large amounts of money. This finding supported their theory of cognitive dissonance and raised questions for incentive theorists. These questions were later answered by incentive theorists who explained their findings in terms of the demand characteristics of the experiment and evaluation apprehension (10). Carlsmith, Collins, and Helmreich (1) attempted to resolve the controversy between dissonance and incentive theorists by postulating that reward interacts with commitment to produce attitude change and that the effect of reward without the control of commitment leads to contradictory results. Later, Collins (2, 3) noted that the negative relationship between reward and attitude change had been established by previous studies but that the critical variables to produce it had not. In a series of six studies, the interaction reported by Carlsmith *et al.* was never consistently replicated, nor was a consistent experimental paradigm ever established. However,

Collins did find evidence for the effect of commitment on the attitude change process.

Linder, Cooper, and Jones (8) contended that choice was the crucial uncontrolled factor in the preceding studies. In their study, high choice procedures as described earlier produced a negative relationship between attitude change and reward and low choice procedures produced a positive relationship.

Recently, Collins (3) formulated the following attribution theory to explain the contradictory findings: When an individual makes a counterattitudinal statement he is faced with the problem of attributing the statement to some force either within himself or to environmental pressure. When the force is attributed to external forces, no attitude change occurs because the externally induced statement is perceived as irrelevant to his own attitude. However, when the force is attributed to internal factors, attitude change does occur. In terms of the independent variables manipulated in earlier studies, Collins stated that high choice and high commitment produce attribution of the forces to internal pressure, while no choice and low commitment produce attribution of the forces to external pressure. Tedeschi, Schlenker, and Bonoma (11) argued that the important factor is what the *S* thinks the listener of the counterattitudinal argument believes is his motive. When the *S* thinks the listener attributes *S*'s change of opinion to his own volition, then attitude change in *S* will occur. They argued that the reason this change occurs is that the *S* does not want to be inconsistent in his behavior.

In sum, while the results of the previous studies are unclear, they do indicate that attitude change can be produced within the laboratory. The most significant variables associated with the counterattitudinal paradigm appear to be commitment, choice, and audience. Presumably, when these variables are manipulated, attitude change should occur in the laboratory. However, the question this study is concerned with is the permanence of the attitude change that is produced. If the attitude change produced remains fairly stable, then some of the preceding theoretical considerations may have merit. However, if the attitude change produced is not stable over time, then the various theories must be modified to account for new results.

The attitude toward birth control, used in this study, invokes an issue very salient to most *Ss* who are used in psychological experiments by American investigators. In typical laboratory studies of attitude change,

nonsalient attitudes are employed. The use of nonsalient attitudes may produce findings which are not generalizable in the same way salient attitudes are.

B. METHOD

a. Subjects. The *Ss* were obtained from an introductory psychology class at a large Southern state university. A total of 93 male and female *Ss* began the study; however, only 80 *Ss* finished as a result of experimental manipulations. In selecting *Ss* the *E* went before an introductory psychology class and asked students who were strongly in favor of birth control to remain after class. After class these *Ss* filled out an attitude scale toward birth control developed by Wang and Thurstone (12). The scale had three alternate forms with a reliability of .84.

b. Setting. The study was conducted in a social psychology research room over a period of two months. Each *S* reported to *E* at a scheduled time and was tested individually.

c. Statistical design. A four factor analysis of variance design with repeated measures on one factor was employed. Ten *Ss* were assigned to each treatment group.

d. Procedure. After reporting to *E*, *Ss* were conducted into the first experimental room which was furnished with two desks and writing materials. After being seated by *E*, *Ss* were told:

As you may know, there has been some controversy on the use of birth control. Today, I want you to construct for me an argument against the use of birth control for two reasons. First, what you say may be used in a public forum on birth control; and second, it is going to be evaluated by a panel of psychologists to see how open-minded you are.

At this point, *Ss* were told they *might* later be asked to read their statement in public and were given the opportunity to drop out prior to being assigned to an experimental group. Eight *Ss* did drop out. *Ss* were then given 15 minutes to prepare their statements. Once the statements were prepared the experimental treatment conditions were introduced.

(1). *Independent variables.* In the *audience condition*, *Ss* had to read their statements in front of a T.V. camera, a tape recorder, and a group of seven stooges who they were told, were in favor of birth control. *Ss* were informed that the members of the audience were advanced students from the speech department who were testing ways of evaluating speaking ability and would be evaluating their performance. *Ss* were also told that the audience expected them to read a statement in favor of birth control. In

the *no audience condition*, Ss read their statements into a tape recorder. This manipulation is consistent with the theoretical considerations and suggestions for experimental manipulations for producing maximal attitude change advocated by Tedeschi, Schlenker, and Bonoma (11).

The choice variable was manipulated in much the same way as in the Linder *et al.* study. Ss in the *choice condition* were told prior to reading their statements that their statements would be recorded and afterwards would be made public (i.e., used as a part of a public forum on birth control later in the year). At this point, Ss were given the opportunity to read or not read their statements and five Ss chose not to read their statements. In the *no choice condition*, the Ss were not given this opportunity.

The *commitment condition* was produced by having S give his name and major at the beginning of the recorded statements. The *no commitment condition* was produced by telling Ss after they had given their statements that what they had said would not be used in the public forum after all, and would therefore not be made public.

The *time* factor was measured by observing the Ss attitude change immediately after the experimental manipulations and three weeks later.

(2). *Dependent variables.* The dependent variables were the differences in attitude scale scores between the pretest and time 1 immediately after the experimental manipulation and the difference between the pretest and time 2 three weeks later.

Scores on the Wang and Thurstone scale were arrived at by weighting each item on the basis of its Thurstone scale value and then multiplying this weight by 5, 4, 3, 2, or 1 based on the Likert format. The direction of the item was also taken into account; therefore overall scores could be either positive or negative. The scores over all items were summed and the sum value represented each S's attitude toward birth control. High scores indicated a favorable attitude and low scores an unfavorable attitude. The scores on the scale ranged from a high of 170 prior to any experimental manipulation to a low of -105 immediately after the experimental manipulation.

An analysis of variance was performed on the change scores as indicated in the *Methods* section. After having read their statements, Ss were administered another attitude scale toward birth control and asked to come back two weeks later at a scheduled time. Ss were also instructed not to say anything about what had taken place. They were told that each S needed to enter the survey with an open mind so that this argument would

be spontaneous and a valid evaluation of his statement could be made by psychologists. When the *Ss* returned for the second time, they were administered the third alternate form of the attitude scale toward birth control and debriefed. First they were asked what they thought the purpose of the study was. No *S* guessed what the purpose was. They were then debriefed. It was explained that the study was concerned with how attitudes toward birth control would change over time if *Ss* were subjected to various conditions. *Ss* were asked not to discuss the experiment.

C. RESULTS

The results indicated that *commitment* and *choice* were not significant in producing attitude change at either of the postexperimental times. However, the main effect of time and the interaction of *audience* and *time* were highly significant. For the main effect of time, the mean attitude change immediately after the experimental manipulation was 25.8 and 9.58 three weeks later. The difference in attitude change between these two times was highly significant ($F = 23.17$; $p < .001$). Thus considerably more attitude change occurred immediately after the experimental manipulation than remained three weeks later. The mean attitude for all *Ss* toward birth control prior to the experimental manipulation was 105.3; the mean attitude three weeks later was 96.33. This difference between means was not significant, indicating that the attitude change that occurred was not permanent.

The interaction of *audience* and *time* was also highly significant ($F = 9.07$; $p < .01$): immediately after the experimental session, the mean attitude change for *Ss* in the *audience condition* was 31.07 and in the *no audience condition* was 20.56 ($p < .01$), whereas three weeks later the mean attitude change for *Ss* in the *audience condition* was 9.07 and in the *no audience condition* was 10.34. The difference between *audience* and *no audience* at this time was not significant. Within the *audience condition* the difference between means after the experimental session and three weeks later was 31.07 and 9.07 ($p < .001$). In the *no audience condition*, the difference between means was 20.56 and 10.34 at the two times and was also significant ($p < .01$).

D. DISCUSSION

The major finding of this study is that the attitude change produced in the counterattitudinal situation by typical procedures was not permanent. Hence, one of the major assumptions of most attitude change studies of American subjects and the theories that inspired them is not supported.

The best interpretation of this finding of temporary change can be made in terms of the classical conception of the components of an attitude. Katz (6) has argued that an attitude is composed of at least three components: a cognitive dimension, an effective dimension, and a conative dimension. Typically, what happens in counterattitudinal studies is that the conative dimension (behavior) is manipulated by having *Ss* write a statement that contradicts their views, which in turn is theorized to affect the cognitive and affective dimensions. However, in most counterattitudinal studies, the attitude selected for manipulation is not very meaningful or salient to the *S*: i.e., he has not had time to form an affective and cognitive orientation toward the attitudinal object. However, in this study this was certainly not the case. Birth control was a very salient issue for each *S* and most likely all *Ss* had in fact formed a cognitive, conative, and affective orientation toward the issue. The fact that attitude change did occur immediately after the manipulation supports the notion that the conative dimension is important; however, the finding that the change does not remain attests to the importance of the other dimensions.

In studies where attitude change has occurred with the use of the commitment, reward, and volition variables, it may be that the attitude selected for study was not salient to the *S*. In fact, studies in this area have been criticized for this reason. Under these conditions, many studies have indicated that pressure on the conative dimension is sufficient to produce change. Furthermore, it may be that pressure on the conative dimension can produce permanent change in contrast to the results of this study. However, this hypothesis has yet to be tested empirically because researchers seldom report follow-up data several weeks after first measuring the depth of change.

The inconsistent research findings associated with the variables reviewed in the Introduction may also be clarified by this interpretation. In this study the effects of *choice* and *commitment* were nonsignificant. In other studies where these variables have produced significant attitude change, it appears that often the attitude selected for study was not a salient one; that is, the attitudes in question did not have strong cognitive and affective dimensions. Thus, when only the conative dimension is significant, attitude change may occur by manipulating the *choice* and *commitment* factors. A study performed by Little and Kenny (9) using a nonsalient attitude supports this contention. Here attitudes toward physical education were measured. *Ss* wrote counterattitudinal statements and the effect of *commitment* was found to produce highly significant attitude change.

In sum, the results indicate that pressure on the conative dimension was

not sufficient to produce permanent attitude change if the attitude was salient. Such pressure does seem to produce change for nonsalient attitudes, although there is little evidence that such change was permanent. In general, it may be that as the saliency of an attitude increases, greater pressure on the conative dimension is required to produce change.

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VITAL STATISTICS, PERCEIVED SEXUAL ATTRACTIVENESS, AND RESPONSE TO RISQUÉ HUMOR*

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SUMMARY

The vital statistics and self-rated physical attractiveness of 200 female student teachers were investigated as predictors of social attitude patterns and preferences among a collection of risqué seaside postcards. Girls who rated themselves as attractive found the cartoons generally less funny than those rating themselves as unattractive. However, girls who were "shapely" according to their bust/waist ratio were generally more appreciative of the cartoons. Neither of these measures of attractiveness was related to social attitudes. The results are compared with previous findings from a study using observer-ratings of attractiveness.

A. INTRODUCTION

In a previous study (4), the rated sexual attractiveness of a group of female student teachers was related to risqué humor preferences. A humor test was designed with the use of a set of cartoon postcards collected from seaside resorts in England. It was found that unattractive girls tended to like the cartoons as a whole, and in particular to like cartoons that involved a "sexy" female as the center of lecherous male attention. Attractive girls tended to like only those cartoons that were explicitly sexual and in which the female character was taking initiative in the situation (e.g., ridiculing the male sex organs). A social attitudes test revealed that the unattractive girls were relatively idealistic, puritanical, and opposed to sexual freedom.

The above findings may help to throw light on the dynamics of humor and the effects of an important human dimension—namely, physical attractiveness—upon mental life. For example, the unattractive girls' liking

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for cartoons depicting male attention might be interpreted as due to "vicarious gratification through fantasy identification." Such an interpretation is consistent with Freud's theory of unconscious sexual longings finding an outlet through humor; a girl would remain unconscious of the real source of pleasure (i.e., sexual), interpreting it to herself only as "funniness." Similarly, the "puritanical" sexual attitudes of unattractive girls might be attributed to "denial." Again, according to Freud, sex would be classified as "sinful" (at the more conscious level of social attitudes) as an ego-defense against painful jealousy feelings; by denouncing sex, an unattractive girl is less likely to feel jealous of those who have a greater opportunity to indulge.

The above study might be criticized on the grounds that the method for assessing attractiveness (observer ratings) was too subjective to be meaningful. While the demonstrated interjudge reliability in the study tends to refute this criticism, an apparent improvement would be to base "attractiveness" on objective, rather than subjective, indices. A related, but rather different, criticism would be to argue rather the opposite; namely, that since what is important is the extent to which the girl *perceives herself* as attractive, what is needed is a self-rating rather than an observer-rating measure of attractiveness. A follow-up study was therefore conducted to extend the measurements of attractiveness in both the objective and subjective directions by using (a) vital statistics, and (b) self-ratings of physical attractiveness.

B. METHOD

Subjects were 200 female student teachers aged 18 to 29 years, a group fairly equivalent to that used in the previous study. They were asked to rate the "funniness" of the same set of 42 seaside postcards and, as before, their social attitudes were assessed with the Conservatism Scale (3). This time, however, instead of having male lecturers rate their attractiveness, they were asked to rate themselves according to how physically attractive they thought they were to the opposite sex on a five-point scale: (a) unattractive, (b) slightly attractive, (c) moderately attractive, (d) very attractive, (e) extremely attractive. Ten girls declined to do this, leaving us with 190 self-ratings of attractiveness. A total of 62 of the girls were measured for their "vital" statistics.

C. RESULTS

Product-moment correlations were calculated among the cartoon ratings, social attitude scores, self-ratings of attractiveness, vital statistics, and such

other information as age. Included in the correlation matrix were two scores derived from the vital statistics that were intended to indicate "shapeliness" of the female form; these were simply bust divided by waist and bust minus waist. The correlation between these two derived scores was .96, indicating that they are virtually interchangeable. Their correlations with the three vital statistics independently suggested that the measure was reflecting general slimness, as well as shapeliness (the derived scores had strong negative correlations with waist and hip size, but little correlation with the absolute bust measurement).

A principal components analysis of the 42 postcards revealed a strong general factor accounting for 30% of the variance, which might be described as "risquéness." Cartoons with high loadings on this factor tended to be prime exemplars of the seaside postcard, based as this "art form" is on overt sexual innuendo; jokes involving explicit reference to sex organs and intercourse had the highest loadings, while jokes dealing with pregnancy, maternity, urination, and defecation had lower, and sometimes quite negligible, loadings. There were no reverse loadings on this factor. Subsequent factors, accounting for relatively small proportions of variance, revealed groupings according to specific content (breasts, male organs, pregnancy, excretion, etc.).

Overall, the girls who rated themselves high in attractiveness tended to regard the cartoons as less funny than those rating themselves low in attractiveness (29 of the 42 correlations being negative; $p < .05$ on a binomial test). Only one postcard gave a correlation with self-rated attractiveness that achieved individual significance; this depicted a busty girl passing a bookshelf in a public library with the sign "Thrillers" apparently indicating her breasts ($r = -.15$, $df = 188$, $p < .05$).

With the use of the bust-waist indicator of sexual attractiveness (shapeliness), the results looked very different. Overall, the shapely girls expressed greater appreciation of the postcards (34 positive correlations out of 42; $p < .001$). and especially of those that appeared most risqué on the basis of the factor analytic results. Four cartoons correlated significantly with the shapeliness measure; these are shown together with loadings on the first principal component (risquéness) in Table 1.

Neither the self-ratings of attractiveness nor the shapeliness of physique measure showed any consistent relationship with the social attitude scores derived from the Conservatism Scale. Also, these supposed indices of attractiveness were independent of age and of each other.

TABLE 1
CARTOONS SIGNIFICANTLY PREFERRED BY "SHAPELY" GIRLS ($N = 62$)

Description of cartoon	Correlation with "shapeliness"	Loading on risqué factor
1. Two men lecherously surveying bikini-clad females: "Do you like fat or thin legs?" "Oh, I prefer something in between."	.34**	.70
2. Two male swimmers admiring female sunbather: "She just lies in the sun all day, but she's lively enough once it goes in!"	.31*	.62
3. Busty pet-shop girl displaying birds in cage labelled TITS: "They're baby ones, Sir, but I can show you a fully grown pair!"	.27*	.59
4. Man and woman viewing painting of a pirate standing behind a very phallic cannon: He: "Oh that?—That will be his Jolly Roger!"	.26*	.71

* $p < .05$.

** $p < .01$.

D. DISCUSSION

The tendency for the girls who perceived themselves as attractive to find the set of cartoons generally less funny was consistent with the previous study (4) based on observer-ratings. The particular cartoon ("Thrillers") that achieved significance was also similar in content to those that discriminated attractive from unattractive girls in the previous study. However, the finding that "shapely" girls were *more* appreciative of the set of cartoons is contrary to both the previous study and to the above result. How can this discrepancy be explained? The lack of relationship between the self-ratings and the shapeliness measure suggests that our critics of the reliability of attractiveness measurement are vindicated in one respect at least; subjective and objective indices of attractiveness cannot be treated as equivalent.² Unfortunately, we were not able to calculate the relationship of our present measures with observer-ratings used in the original study because different subjects were used.

Our preliminary attempt to provide an objective measure of attractive-

² A recent study (1) has also revealed discrepancies between an objective measure (the ponderal index) and self-ratings of physique. Further, it was found that females with high scores on the "L" scale of the Eysenck Personality Inventory tended to overestimate the attractiveness of their physique, while those with low "L" scores were excessively critical of themselves.

ness based on bust to waist ratio appears to have failed in that the index is unrelated to perceived attractiveness. This is perhaps not surprising in view of the many other aspects that contribute to a girl's physical attractiveness (e.g., facial features). The fact that our physique measure did, however, relate significantly to the cartoon ratings should not be ignored. With reference to the results of the two studies together, it seems that cartoons in which the female is treated as a sex object at the center of male attention are liked particularly by girls who are "built" in the sense of having a desirable female shape, but who are otherwise unattractive. For example, two of the cartoons in Table 1 (Nos. 1 and 3), liked particularly by the "shapely" girls, were among those most liked by unattractive girls in the previous study.

The present study did not reveal any relationship between perceived attractiveness or "shapeliness" on the one hand, and social attitudes on the other. The previous study found a relationship by using observer-ratings. Perhaps, the "denial" hypothesized to account for the previous result was operating to distort the self-ratings of attractiveness in some way; e.g., an unattractive girl in denying her sexual needs may avoid purely sexual criteria and so be less likely to rate herself as unattractive. The vagaries of this kind of *ad hoc* Freudian theorizing, however, are legend (2); such speculation is tempting, but further research will be needed before firm conclusions can be drawn.

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THE EFFECTS OF PRIOR EXPERIENCE WITH A TASK ON SUBSEQUENT CONFORMITY TO A DIFFERENT TASK*¹

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SUMMARY

Subject correctness and group agreement were seen to interact and generalize across differing classes of experimental tasks to mediate conformity by affecting subject's relative competence. Prior experience with an informational task (the Canadian Knowledge Inventory) generalized to affect conformity on *both* other informational task items and differing items of a perceptual nature. Subjects were recruited from visitors to the Ontario Science Centre. Those who received experimental manipulations of correctness and agreement which led them to perceive themselves incompetent relative to the group were the most conforming, while those who received experimental manipulations leading to the perception of superior competence were the least conforming. This held true for both manipulated and perceived relative competence.

It was further observed as follows: (a) Younger subjects were more conforming only when they perceived themselves less competent than the group. (b) Subject sex interacted with both correctness and agreement to affect conformity. (c) Older subjects were more likely to be suspicious of the experimental manipulation. (d) No precise distinction could be made between method suspicion and purpose awareness. (e) Suspicious subjects exhibited lower conformity.

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A. INTRODUCTION

Several investigators (8, 9, 17) have found that among Canadian high school and college students, prior experiences of group agreement affect subsequent conformity to group norms on the same task. The *prior experience-conformity* relationship was mediated via perceived relative competence. Subjects who perceived themselves as more competent than the group on a task subsequently conformed less to that task than those who perceived themselves as less competent than the group. Geller, Endler, and Wiesensthal (10), however, found that prior experience with one task did not subsequently affect conformity on a different task. That is, relative competence mediated conformity for a specific task (Canadian Knowledge Inventory), but did not generalize across tasks (i.e., from a light discrimination task to the Canadian Knowledge Inventory).

It may be that generalization occurs within a class of tasks (e.g., verbal) but does not generalize between classes of tasks (i.e., from perceptual to verbal or *vice versa*). One purpose of the present study was to determine whether prior experience with an informational (verbal) task mediates relative competence and affects subsequent conformity on a different task. A secondary purpose was to determine whether conformity generalizes from a verbal task to a perceptual task. Generalization did not occur from a perceptual task to a verbal task according to the data of Geller *et al.* (10), but this does not imply that the reverse is untenable.

The present study was also concerned with testing the generalizability of previous *relative competence-conformity* studies with respect to samples of subjects investigated: Ettinger *et al.* (9), Wiesensthal *et al.* (17), and Geller *et al.* (10) studied college students, while Endler *et al.* (8) studied high school students. Another purpose was to test a sample of people (aged 14-30) visiting a science and technology exhibition during the summer and to explore the relationship between age and conformity.

Berenda (2) found that younger children conformed more than older children, with Bishop and Beckman (3), Strassberg and Wiggen (15), and Patel and Gordon (13) reporting similar findings. Costanzo and Shaw (4), and Iscoe, Williams, and Harvey (11, 12) found a curvilinear relationship between age and conformity for children. Costanzo and Shaw (4) found that conformity increased from ages 7-9 to 11-13 and decreased after through ages 15-17 and 19-21. Allen and Newtonson (1) found that conformity decreased with age but suggested that age trends in conformity may be related to situational factors. The present study will compare the con-

forming behavior of minors (14-17 years of age) and adults (18-30 years of age).

Endler *et al.* (8), using high school students, and Geller *et al.* (10), using college students, found that females conformed more than males, while Wiesenthal *et al.* (17), using college students, found no sex differences. Sistrunk and McDavid (14) suggest that sex differences in conformity may be a function of sex-oriented test items which might make the items more difficult for one sex. Endler *et al.* (8) state that such a bias may operate for the Canadian Knowledge Inventory (CKI), but not for a visual discrimination task. Since the present study uses the CKI for the prior experience task, and a perceptual task to measure conformity, the suggestion is that the CKI would induce sex differences, but none would be expected on the perceptual items of the conformity task. However, we would expect females to conform more than males on the verbal conformity items.

On the basis of the previous considerations, the specific hypotheses investigated are as follows:

1. Prior experience of subject correctness and group agreement on a task interact to induce relative competence and subsequent conformity to a different task, but of the same class or category as the original task. Specifically, prior experience with an informational task affects subsequent conformity on a different verbal task so that subjects who are more competent than the group subsequently conform less than those who are less competent than the group. No prediction is being made as to whether prior experience with an informational task will generalize to affect conformity to a perceptual task (i.e., to a task of a different class or category).
2. Minors (aged 14-17) will conform more than adults (aged 18-30).
3. Females will conform more than males on the verbal task. No sex differences are predicted for the perceptual task.

B. METHOD

1. Subjects

Eighty-four male and 89 female volunteers, ages 14-30, were selected from visitors to the Ontario Science Centre to participate in an experiment purporting to test information processing.

2. Apparatus

Subjects participated in a social communication task, using a modified Crutchfield apparatus (5) housed in a mobile laboratory. Subjects were led

to believe that they were communicating with one another, but in fact all communications were contrived by the experimenter.

A shortened form of the Canadian Knowledge Inventory (8) was used as stimulus material in part one of the study. The inventory items were presented as 12 slides containing multiple-choice questions (five alternative answers) about Canada, past and present. They contained such items as: "In which city was the telephone invented?" or "What is the world's largest fresh water island?"

Twenty-six verbal and perceptual items selected from Endler (5) served as stimulus material in part two of the study. The items were presented as slides containing multiple choice questions (five alternative answers). The verbal items contained such questions as "Who was the Byzantine Emperor from 479-491" and the perceptual items contained such questions as "Which of the following figures has the largest area?" followed by five appropriate figures. There were 14 verbal and 12 perceptual items, with four verbal and two perceptual items serving as buffer trials and the remaining 20 items (10 verbal and 10 perceptual) serving as critical trials.

3. *Questionnaire*

All subjects answered a five question postexperimental questionnaire. Question number one was used to assess the subject's perceived degree of competence relative to this group when answering questions about Canada. The five possible answers ranged from 5 (well above group average) to 1 (well below group average). On the basis of answers to this question, subjects were classified into three categories: 1 (less competent than the group), 2 (equally competent with the group), and 3 (more competent than the group). Question number two was used to assess the subject's perceived degree of competence relative to his group on the verbal and perceptual items. The same scale of answers was used as in question one.

The third question, an open-ended one, assessed the subject's perception or awareness of the general purpose of the experiment. On the basis of answers to this question subjects were classified by three judges as either 1 (aware) or 2 (unaware) of the purpose of the experiment.

Question number four assessed the subject's degree of interest in meeting with members of the group if the occasion arose. This was designed to tap motivational aspects of subjects' performance. The six possible answers ranged from 6 (extremely interested) to 1 (not interested at all). Question number five, offering five possible answers ranging from 1 (not suspicious at all) to 5 (very highly suspicious), was used to assess the subject's degree

of suspicion concerning the experimental procedures. On the basis of answers to this question, subjects choosing the answers "highly suspicious" or "very highly suspicious" were classified as "High Suspicious" and subjects choosing the remaining alternatives as "Low Suspicious."

4. Procedure

Five subjects of the same sex were randomly assigned to each cell of a $2 \times 2 \times 2 \times 2$ factorial design with subject's sex, subject correctness-incorrectness, group agreement-disagreement, and subject's age (14-17 and 18-30)³ defining each of the factors, respectively.

Subjects participated in 38 trials in two sequential parts (prior experience and social pressure) on the social communication apparatus. During Part I (Prior Experience) subjects responded to the Canadian Knowledge Inventory (8), and during Part II (Social Pressure) they responded to the verbal and perceptual conformity items (5).

Part I. Prior Experience. Trials 1-12 consisted of manipulation trials. During these trials all subjects responded in the first or second position before seeing the individual contrived responses of the other group members. The factors, subject correctness and group agreement, were manipulated by means of four different performance feedback sheets which were handed to subjects following the twelfth trial. The feedback sheet indicated both the number of correct responses the subject had made and the number of correct responses the group had made on the last 12 trials. In the correct condition subjects were informed that they made the same number of correct responses (three or nine) as the group; subjects in the group disagree condition were informed that the group had made a different number of correct responses (three or nine).

Part II. Social Pressure. Trials 13-38 contained six buffer and 20 critical trials. On the critical trials subjects responded in positions 4 or 5 after seeing unanimous incorrect judgments of the three or four other group members. A subject's verbal conformity score was the number of times on the 10 critical verbal trials that he agreed with the contrived incorrect responses communicated to him via the apparatus, and his perceptual conformity score was the number of times he agreed on the 10 critical perceptual trials. His total conformity score (T) was the sum of his verbal (V) and perceptual (P) scores.

³ An attempt was made to assign subjects from the same age group to each cell. However, because of the nature of subject recruitment this was often impossible. Therefore, in several groups the age categories were mixed.

At the conclusion the subjects were asked to fill out the postexperimental questionnaire.

The debriefing included both personal conversation with the Ss and a tape-recorded explanation of the experiment. The Ss were questioned to draw out their feelings and suspicions and to allow them to guess at the deception. Then, after the tape was played, the subjects were shown the apparatus, and any further questions were answered.

C. RESULTS

1. *Competence Manipulation*

The effectiveness of the experimental manipulation was assessed by means of a three-way analysis of variance (Sex \times Subject Correctness \times Group Agreement) of a self-report item⁴ measuring subjects' relative competence on the Canadian Knowledge Inventory in relation to the group. The relevant means for relative competence are as follows: Subject Correct-Group Agrees, $\bar{X} = 1.83$ ($N = 46$); Subject Correct-Group Disagrees, $\bar{X} = 2.17$ ($N = 42$); Subject Incorrect-Group Agrees, $\bar{X} = 1.80$ ($N = 45$); and Subject Incorrect-Group Disagrees, $\bar{X} = 1.25$ ($N = 40$). The main effect of correctness on subject's relative competence was significant ($F = 21.66$, $p < .001$) as was the Subject Correctness by Group Agreement interaction ($F = 19.75$, $p < .001$). Multiple comparisons employing t tests revealed that only the two group agreement conditions (1.83 *vs.* 1.80) did not differ from each other, while all the other cells were significant at the .01 level. Since the above analysis provides evidence that the experimental manipulation was effective, analyses of the conformity results were computed.

2. *Conformity: Experimental Manipulation*

The effectiveness of the experimental manipulations on the dependent variables of verbal, perceptual, and total conformity were assessed by means of four-way analyses of variance (Sex \times Subject Correctness \times Group Agreement \times Age). Since the results for verbal and perceptual conformity were comparable to each other and comparable to the results for total conformity, and since total conformity was a sum of verbal and perceptual conformity, most of the reported results will deal primarily with total conformity. The main effect of subject correctness was significant

⁴ The item was presented in the form of a five-choice question. However, for the purposes of the present analysis the item was scored on a three-point scale. An analysis involving the original five-point scale produces comparable results. All future analyses, therefore, will involve only the three-point scale.

($F = 9.82$, $p < .01$ for total conformity) for all three dependent variables (verbal, perceptual, and total). The mean total conformity score for subject correctness was 6.07 ($N = 88$) and for subject incorrectness it was 8.12 ($N = 85$). A main effect of age was significant for verbal conformity only ($F = 4.25$, $p < .05$). The means for verbal conformity were 4.11 ($N = 85$) for subjects 14-17 years of age, and 3.26 ($N = 88$) for subjects 18-30 years of age. No other main effects were significant. There was a significant triple interaction (Sex \times Subject Correctness \times Group Agreement) for perceptual conformity only ($F = 4.20$, $p < .05$). There was a significant Sex by Subject Correctness interaction for all three dependent variables. The Sex by Subject Correctness F ratio for total conformity was 6.17 ($p < .05$). The total conformity means are as follows: Subject Correct males, $\bar{X} = 5.62$ ($N = 44$); Subject Incorrect males, $\bar{X} = 9.30$ ($N = 40$); Subject Correct females, $\bar{X} = 6.52$ ($N = 44$); and Subject Incorrect females, $\bar{X} = 6.95$ ($N = 45$). t -test multiple comparisons indicated that the Male-Incorrect cell significantly differed from the other cells, thus accounting for the interaction. Another significant interaction for all three dependent variables was Sex by Group Agreement. The Sex by Agreement F ratio for total conformity was 6.30 ($p < .05$). It was seen that, with respect to total conformity, males in the Group Disagreement conditions were the most conforming ($\bar{X} = 8.16$, $N = 41$), with female subjects in Group Agreement conditions producing the next largest amount of conformity ($\bar{X} = 7.68$, $N = 48$). The mean conformity for males in the Group Agrees condition was $\bar{X} = 6.77$ ($N = 43$) and the mean conformity for females in the Group Disagrees condition was $\bar{X} = 5.78$ ($N = 41$). Subject Correctness by Group Agreement produced a third significant interaction for all three dependent variables ($F = 8.49$, $p < .01$ for total conformity).

The least amount of conformity ($\bar{X} = 4.99$, $N = 42$) occurred for those subjects who received the Subject Correct-Group Disagrees ($S_C G_D$) condition and the greatest amount of conformity ($\bar{X} = 8.95$, $N = 40$) for the experimental manipulation of incompetence (Subject Incorrect-Group Disagrees or $S_I G_D$). For the Subject Correct-Group Agrees Group ($S_C G_A$) the mean was 7.15 ($N = 46$), and for the Subject Incorrect-Group Agrees ($S_I G_A$) the mean was 7.30 ($N = 45$).

3. *Conformity: Perceived Relative Competence*

A one-way analysis of variance was performed on the conformity scores for the three levels of perceived relative competence on the Canadian Knowledge Inventory (subject less competent than the group or $S < G$,

subject equally competent with group or $S = G$, and subject more competent than group or $S > G$) which constituted the first experimental task. The effect was significant for verbal, perceptual, and total conformity, the perceived relative competence F ratio for total conformity being 5.29 ($p < .01$). The relevant means were 7.81 for $S < G$, 7.33 for $S = G$, and 4.70 for $S > G$. t -tests indicated that $S > G$ means differed from both the $S < G$ and $S = G$ means at less than the .01 level.

It was also observed that no conformity differences were seen for those subjects who veridically perceived their level of competence as intended by the experimental manipulations, and those who held incongruent perceptions.

4. *Suspicion and Awareness*

On the basis of the postexperimental questionnaire, subjects were classified according to their method suspicion and purpose awareness of the experimental manipulation. Inspection of the cell frequencies did not reveal any disproportionate number of suspicious and aware subjects across conditions. Since the phi coefficient correlation between suspicion and awareness was significant at the .01 level ($r_{\text{phi}} = .35$), separate analyses of variance were conducted for these two variables.

A one-way analysis of variance was computed, with subjects divided into two groups on the basis of suspicion of the deception. Low Suspicious subjects ($N = 135$) conformed more than High Suspicious subjects ($N = 38$) for verbal, perceptual, and total conformity. The suspicion F ratio for total conformity was 7.38 ($p < .01$) with the means being 7.56 for Low Suspicious and 5.32 for High Suspicious subjects.

Another one-way analysis of variance was conducted for aware and unaware subjects. Subjects aware ($N = 54$) of the purpose of the experiment conformed less than unaware subjects ($N = 119$) for all three dependent variables. The mean total conformity score for aware subjects was 5.68 and for unaware subjects it was 7.70. The Awareness F ratio was 7.41 ($p < .01$).

To determine whether suspicion and awareness were a function of sex and age, two-way analyses of variance (Sex by Age) were conducted. The main effect of sex was not significant for either suspicion or awareness. However, there was a significant main effect for age ($F = 6.02$, $p < .025$ for suspicion, and $F = 21.68$, $p < .001$ for awareness). Subjects 14-17 years of age were less suspicious and less aware of the purpose of the experiment than subjects 18-30 years of age.

5. *Age and Conformity*

Several correlations were conducted to determine the relationship between age and conformity. A significant correlation was found in the Subject Incorrect-Group Disagrees condition ($r = -.38$, $p < .02$ for total conformity), indicating a decrease in conformity related to an increase in age. However, for the other experimental conditions, no significant correlations were obtained.

6. *Nationality and Conformity*

The subject population consisted of Canadians, Americans, and members of the United Kingdom. Subjects were classified both on the basis of citizenship and place of residence. The distribution, by place of residence was as follows: Canada = 95, U.S.A. = 69, U.K. = 8, and other = 1. Two-way analyses of variance for both nationality and place of residence showed no significant group differences in conformity.

D. DISCUSSION

1. *Effectiveness of the Manipulation*

The perceived competence results on the Canadian Knowledge Inventory indicate that the experimental manipulation of subject correctness and group agreement was effective in inducing relative competence. The results were as predicted in that individuals in the Subject Correct-Group Disagrees condition perceived themselves as most competent ($\bar{X} = 2.17$), whereas individuals in the Subject Incorrect-Group Disagrees condition perceived themselves as least competent ($\bar{X} = 1.25$).

2. *Relative Competence and Conformity*

Correctness by Agreement interacted to induce varying levels of conformity, and the means of the interaction were ordered as expected. On the basis of previous theorizing and research (8, 9, 17) it was expected that conformity tendencies should be maximized in the Subject Incorrect-Group Disagrees condition, since the subject was made to feel less competent than the group. Conversely, in the Subject Correct-Group Disagrees condition, the forces for conformity should be minimized and thus minimal conformity should be manifested. Under conditions of low competency discrepancies (Subject Correct-Group Agrees and Subject Incorrect-Group Agrees) there should be moderate levels of conformity. These predictions were confirmed (for verbal, perceptual, and total conformity), since subjects in

the Subject Incorrect-Group Disagrees condition conformed significantly more than subjects in the two equal competence conditions ($S_I G_I$, $S_C G_C$). Subjects in these equal competence conditions conformed significantly more than those in the Subject Correct-Group Disagrees condition.

The findings based on the experimental manipulation were corroborated by the results obtained on the basis of the subjects' perceived relative competence. When subjects were classified on their perception of competence as compared to the group, on the Canadian Knowledge Inventory (CKI), subjects who perceived themselves as more competent than the group conformed ($S > G$) significantly less than both subjects who felt less competent than the group ($S < G$) and those who felt equally competent to the group ($S = G$). This was true for all three measures of conforming behavior. Endler *et al.* (8) and Geller *et al.* (10) found the same patterning as was presently obtained, although Wiesenenthal *et al.* (17) found that $S < G$ subjects conformed more than $S > G$ subjects, but $S = G$ subjects were the most conforming. There were no differences in conformity between those subjects who failed to perceive their competence as intended by the experimental manipulation and those reporting perceptions congruent to the manipulation. Similar findings have also been reported by Endler *et al.* (8), Geller *et al.* (10), and by Wiesenenthal *et al.* (17) although Wiesenenthal *et al.* (17) did find that manipulation congruence interacted with agreement.

3. Task Generalization and Conformity

The results indicate that relative competence on an informational (verbal) task, as mediated by the interaction of group agreement and subject correctness, generalizes to induce conformity on both a different verbal task and on a perceptual task. The Subject by Correctness interaction was significant both with respect to verbal conformity and with respect to perceptual conformity. The differences between perceptual and verbal conformity were not significant. Geller *et al.* (10) found that generalization *did not* occur from a perceptual task to a verbal task. A possible reason for the discrepancies between the two sets of results is that Geller *et al.* (10) used a light discrimination perceptual task, whereas the present study used geometric forms presented in the same format as the verbal items. Therefore, the present perceptual task may have been qualitatively closer to the present verbal tasks than to a light discrimination task. Thus the present study provides some evidence for generalization of conformity across tasks, but whether this is true for both similar and dissimilar tasks is still not clear.

4. Age and Conformity

Adults conformed significantly less than minors, but only with respect to the verbal items. For perceptual items where subjects can visually verify their responses there were no conformity differences as a function of age. The relationship between age and conformity however is a complex one. There were significant negative correlations between age and both verbal conformity and total conformity, but this was true only for subjects in the Subject Incorrect-Group Disagrees condition. This seems to indicate that conformity was negatively related to age only when subjects perceived themselves as less competent than the group. The relationship between age and conformity seems to be more complicated than that reported by Bishop and Beckman (3), Strassberg and Wiggen (15), and Patel and Gordon (13).

5. Sex and Conformity

The sex variable *per se* did not affect conforming behavior. This suggests perhaps that the conformity scale may not contain an inherent sex bias (8, 14). However, the sex variable did interact significantly with both correctness and agreement to affect conformity. The Sex by Correctness interaction indicated that males in the Subject Incorrect group conformed significantly more than subjects in the other three cells. Therefore, the correctness variable does not affect conformity for females, but being incorrect maximizes conformity for males. The Sex by Agreement interaction indicates for males that the Group Disagrees subjects conform more than the Group Agrees subjects, whereas for females the reverse is true.

6. Suspicion, Awareness, and Conformity

Stricker, Messick, and Jackson (16) have reported that their suspicious subjects exhibited lower conformity, a finding replicated in the present study and in the Geller *et al.* (10) paper. Earlier studies by the present authors (8, 17) have failed to find such differences. The Endler *et al.* (8) finding that older subjects were more suspicious was also replicated in the present study. Since both method suspicion and purpose awareness were intercorrelated and yielded unitary effects, the usefulness and independence of this distinction may be questioned.

7. Situational and Individual Differences Factor

Overall the results point to the importance of examining the relationship between situational and individual difference factors in affecting conformity. In the present study Subject Correctness and Group Agreement can

be viewed as situational factors, and Age and Sex as individual difference (personality) factors. An examination of the four-way analyses of variance indicates the effects of Person by Situation interactions on conforming behavior. Note that both the Sex by Correctness interaction and the Sex by Agreement interactions were significant. The importance of the situational factors is attested to by the fact that the Correctness by Agreement interaction was significant in that subjects who were less competent than the group conformed significantly more than those who were more competent than the group. Correctness and agreement interacted to induce relative competence which in turn affects conformity. Other research (6, 7) points to the importance of examining the interaction of situational and individual difference factors when investigating personal and social behavior.

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THE RELATIONSHIP BETWEEN POLITICAL IDEOLOGY AND INFORMATION AS A FUNCTION OF PARTICIPATION*

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SUMMARY

The relationship between two measures of intellectual competence and political ideology was estimated at two levels of political activism. Undergraduate subjects, $N = 753$, were classified on the basis of their position along the liberal-conservative continuum, and according to whether the subject had or had not been active in political affairs. The results indicated that no general statement concerning the intellectual competency of those possessing a particular ideology was justified. Rather, both level of activism and dimension of intellectual competence had to be taken into consideration.

A. INTRODUCTION

The literature contains several studies which have been interpreted to indicate that American college students who hold left wing political beliefs tend to be more intelligent than those who adhere to a right wing political ideology (2, 4, 5). Kerpelman (3), criticizing such findings for confounding political ideology with political activism, reports data which suggest that when the level of activism is controlled, the association between ideology and intelligence disappears. In obtaining these results, however, Kerpelman defined intellectual competence in terms of an objective, paper and pencil test of verbal intelligence (1), whereas previous workers had used indices of intellectuality: i.e., interest in intellectual activities or amount of information possessed. Hence, although Kerpelman's seemingly contradictory results may well have derived from his efforts to control level of political activism, they may also have resulted from the use of a measure of

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intellectual competence that differed from those previously used to investigate this relationship.

The present study was conducted in order to investigate these relationships more fully. An attempt was made to estimate separately the relationship between political ideology and verbal intelligence, and the relationship between political ideology and the amount of information possessed concerning current social and political affairs.

B. METHOD

The sample consisted of 753 undergraduate students who were enrolled at Oklahoma State University. A substantial portion, 88 percent, were in their first two years of college, and the majority, 89 percent, had not taken more than two college courses related to the content of the information scale that was used. Only 17 percent claimed to have participated in political activities, such as fund raising, canvassing, and the like.

The study was divided into two phases with a different experimenter conducting each phase. The first was carried out during class time, and it consisted of presenting subjects with two instruments. One was a questionnaire requesting information concerning the subject's social background and the extent to which he had been active in political affairs. The second was a 50-item multiple choice test which measured the extent to which the subject possessed factual knowledge concerning political figures, parties, legislative issues, judicial decisions, political processes, and political philosophies. These items were distributed over a wide range of difficulty levels as was determined from a rather extensive pilot study which also considered each item's discrimination capabilities.

From two to three weeks following the first phase, a second investigator visited each classroom seeking volunteers for a study that was to be conducted out of class and for which participants would receive minor course credit. This phase of the experiment consisted of presenting subjects with both forms of the Social Attitude Scale (6), an instrument constructed to measure attitudes thought to lie at the foundation of the liberalism-conservatism system of social attitudes.

Finally, scores from the Vocabulary Scale of the Nelson Denny Reading Inventory were obtained to gain an estimate of verbal intelligence that was comparable to that used by Kerpelman (3) in the study previously cited.

C. RESULTS

The information test was scored for the percent correct responses. These values, ranging from 12 percent to 90 percent, fell into a positively

skewed distribution having a mode of 50 percent. Approximately 31 percent of the subjects were able to answer correctly more than one half of the items. The attitude scale was scored according to standard Likert procedures, and the scores from both forms of the scale were combined to form a composite estimate of the subject's position along the liberal-conservative continuum. Liberal and conservative groups were formed by dividing the distribution of composite scores at the median. In addition, the data were sorted into two groups, one comprised of those who had never been actively involved in political activities, and the other consisting of those who reported participation in one or more forms of political activities that were included on the background questionnaire.

The data analyses dealt with 2×2 tables which involved the two levels of political participation together with the liberal and conservative attitude classifications. Since there were two dependent variables—i.e., verbal intelligence and amount of current information—separate analyses were carried out for each.

Table 1 summarizes means obtained from the four experimental groups. The analyses of these data proceeded by means of a series of t tests which in effect provided a complete breakdown of the between group variance. Comparisons between liberal and conservative groups which considered mean information scores yielded significant t values at both levels of political participation. A highly significant t of 6.12, $p < .001$, was obtained from the contrast between liberal nonparticipants and conservative nonparticipants, while a t of 1.97, $p < .05$, was obtained from a similar comparison between liberal and conservative subjects who had been active in political activities. In both these instances the liberal group displayed a higher level of current information than did the comparable conservative group.

Similar sets of comparisons were carried out concerning participation effects. Although not orthogonal to those results just cited, a significant $t = 2.54$, $p < .01$, was obtained for the contrast between conservative participants and conservative nonparticipants; however, a similar comparison between liberal participants and nonparticipants yielded a t value that failed to reach the chosen level of significance, $\alpha = .05$.

An analysis of the estimates of verbal intelligence followed similar lines to those just reported. A highly significant $t = 4.74$, $p < .01$, was obtained from the comparison of mean vocabulary test scores found in association with liberal and conservative nonparticipants. The means in Table 1 indicate that the liberal nonactivist tended to score significantly higher than the conservative nonactivist. A similar analysis carried out between the

TABLE 1
MEANS OBTAINED FROM FOUR EXPERIMENTAL GROUPS

Groups	Information Mean ^a	Verbal intelligence Mean ^b
Participators		
Liberals	51.53	40.08
Conservatives	45.53	38.41
Nonparticipators		
Liberals	47.27	38.77
Conservatives	39.60	34.40

^a Percent of items correct.

^b Number correct.

means obtained from the liberal and conservative activist resulted in a $t < 1.00$; hence this difference in estimates of verbal intelligence failed to separate significantly the two ideological groups.

A comparison of liberal subjects who had previously participated in politics with those who had not resulted in a $t < 1.00$. Hence, the verbal intelligence of the participators did not differ from the nonparticipators. The same was not the case when a similar analysis was performed on conservative groups. In this instance a $t = 2.00$, $p < .05$, was obtained thus indicating a tendency for the conservative participators to score higher in verbal intelligence than did the group of conservative nonparticipators.

D. DISCUSSION

The results of the present study provide additional support to a literature which suggests that the distinctions between liberal and conservative beliefs are associated with differences in basic psychological attributes. However, the relationship between measures of intellectual competence and political ideology may be more complex than previous research has suggested. For example, consistent with the previous literature, statistical analysis revealed that at both levels of participation subjects who scored toward the liberal end of the attitude scale possessed significantly more information about social and political events than their conservative counterparts. This relationship altered somewhat when the variable under consideration was verbal intelligence. Here liberal nonparticipants scored significantly higher than conservative nonparticipants, but there was no significant difference between liberals and conservatives who had actively participated in politics.

Participation in political affairs did not appear to be related either to intelligence or intellectuality among the liberal groups, since there were no

significant differences found on either variable when liberal activists were compared to liberal nonactivists. On the other hand, both variables were found to differentiate conservative groups, since conservative participants were both more intelligent and more intellectual than their nonparticipant counterparts.

It would appear that on the basis of the results of this study, a general statement that liberals among American college students are more intelligent than conservatives requires some qualification. Statements of this nature (4) should take into consideration both the level of political activism evident, as well as the particular dimension of intellectual competence under consideration. However, neither this nor any previously cited study has reported a difference in intellectual competence which favored conservative subjects. Under what circumstances, if any, differences in this direction will be observed is yet to be reported.

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THIRD PARTIES IN THE INTERVIEW SITUATION: EVIDENCE FROM HONG KONG*¹

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SUMMARY

The effect of the presence or absence of parents during interviews with 1123 young people in Hong Kong has been tested. For five statements presented during the interviews, concerning respondents' attitudes towards the family and family relationships, parental presence significantly affected the responses.

A. INTRODUCTION

Research methodologists are in no doubt about the biasing effects of the presence of third parties—what Mitchell (4) has referred to as “clinical witnesses”—during interviews. Surveys involving interviews in the home are particularly prone to this source of error. Interviewer-respondent privacy is sometimes difficult to arrange—there may not be suitable separate rooms in which the interview can take place, or a husband or father may object to his wife or child being interviewed alone. One-to-one interviewer-respondent situations are especially difficult to set up in developing countries, where these problems are present in an exaggerated form. Cultural norms frequently make public, let alone private, interviews with women and minors an impossibility. Privacy is difficult to obtain in the communal living conditions which are the rule rather than the exception in much of the developing world. Moreover, the novelty of the

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presence of an interviewer (often of a visibly different socioeconomic, if not racial, group) means that interviews often turn into "public occasions" (5).

Privacy is not a characteristic of daily life for most of the inhabitants of Hong Kong. Virtually the whole of the population live in small flats (usually of one room per family) or settlements of squatter huts. Most people live in conditions of very considerable overcrowding. Hopkins (3) has shown that 48% of households in private tenements, 50% of households in flats in Government resettlement areas, and 51% of squatter households have less than 24 sq. ft. gross living space per person. Many families live in shared accommodation. In such a situation most people live out their daily lives under the scrutiny of their families and neighbours. Domestic activities spill over into the street, onto balconies, and into passageways. It is an everyday sight to see a family eating a meal on the pavement outside the door of their room, or to see men shaving, women washing clothes, and children doing homework. Such conditions are largely the result of overcrowding brought about by the acute housing shortage in Hong Kong, but the climate also contributes, for during much of the year, the street is more attractive than the stuffy home: "In the Hong Kong climate, it is often more comfortable to be in the shade out of doors than inside" (3, p. 282). Moreover, Goodstadt (2, p. 259) has argued that the Chinese in Hong Kong "do not seem to attach a very high priority to living in accommodation of a standard that westerners would consider as essential for health and comfort." Savings, clothes, jewelry, and public entertaining are more important as outward signs of status than housing. Although the degree of overcrowding and the lack of privacy is surprising—even alarming—to the westerner, Goodstadt concludes that the people in Hong Kong "do not seem to resent living under the curious scrutiny of neighbours and relatives of every degree" (2, p. 259).

B. METHOD

These typical living patterns posed problems in the course of a survey of the attitudes of young people ages 15-29 in urban Hong Kong. Eleven hundred twenty-three young people were interviewed, the sample being derived from an earlier study of housing conditions where the sampling frame was the household. The sample was thus more representative than an institutional sample based on the members of youth clubs or schools. Private interviews proved difficult to arrange. We were concerned in particular about the influence of the presence of parents on the replies of the respondents, since many of the items in the questionnaire were con-

cerned with attitudes towards the family, work, and other potentially sensitive issues. Interviewers were instructed to record the presence or absence of parents in the interview situation, so that we might be able to test whether the presence of parents significantly affected the replies of respondents. In half (572; 50.9%) of the completed interviews one or both parents were present.

Data were obtained from respondents on a number of socioeconomic background factors, including education and occupation, and the main part of the interview schedule consisted of 49 attitude statements. These statements were divided into two broad groups, those concerning family structure and relationships and those about a wider range of social institutions. Responses were obtained in terms of three- and five-point agreement-disagreement scales indicative of "traditional" and "modern" attitudes. In order to simplify the task of analysis it was decided to reduce the 49 statements to a shorter list which would differentiate between respondents' replies along a continuum stretching from "extremely modern" to "extremely traditional" responses. The analytical procedure used is described elsewhere (1). Eleven statements were finally identified which differentiated within the sample of respondents. Five of these 11 statements came from the subgroup concerning the family, and six from the subgroup of statements about social institutions. Variations in response were associated with the presence or absence of parents at the interview. It was hypothesized that the presence of one or both parents in the interview situation would significantly affect the replies of respondents to the 11 attitude statements. Alternatively, it was hypothesized that only the replies to the more sensitive, more "immediate" statements concerning family structure and relationships would be significantly affected by parental presence.

C. RESULTS AND DISCUSSION

In analyzing the effect of parental presence or absence on respondents' replies, it was first necessary to check whether the sex and age of respondents was related to the presence of their parents during the interview. We found that parents were significantly more likely to be present when male and younger respondents were interviewed ($p < .001$). However, it was known that male and younger respondents were more likely to live with their parents than female and older respondents. This pattern was due to three interrelated factors: the presence in our sample of four times as many married female respondents as male, combined with the practice of pat-

rilocality amongst married couples who did not set up independent households, and the presence in the younger age groups of larger proportions of unmarried respondents who had thus not set up independent households. Log likelihood ratio tests² indicated that there was no significant difference by sex or age in the extent of parental presence at the interview, after controlling for differential proportions of the sex and age groups living with their parents.

Log likelihood ratio tests were carried out on the responses to the 11 attitude statements (*a*) by parental presence, and then controlling for the differential extent of parental presence depending on (*b*) the sex and (*c*) the age of the respondents. In all three instances for only two of the 11 statements—the same two statements, both from the family subgroup of items—was a statistically significant association revealed. The cumulative binomial probability distribution was also calculated and the probability of obtaining results for 11 items which were significant at $p < .1$ level or better was calculated. To have achieved three or more significant results would have been significant at the $p < .1$ level. Since only two significant results were obtained, the main hypothesis was rejected.

The alternative hypothesis, that responses to the family subgroup of statements would be significantly affected by parental presence, was tested. As has been noted two of the five family statements were significantly affected by parental presence, after controlling for sex and age, and none of the six attitude statements concerning social institutions. The cumulative binomial probability of obtaining two significant results out of five was significant at the $p < .1$ level.³ The alternative hypothesis was, therefore, supported.

The results found may be explained in terms of the differential sensitivity and relevance of the 11 statements to the parent/young adult relationship. Five statements were concerned with the family, and six with a wider

² The log likelihood ratio was used as an alternative to the more usual χ^2 contingency test. The log likelihood ratio test has been described by Woolf (6). Our calculations were made from $x \log x$ tabulations similar to those drawn up by Woolf. This particular approach was used because it is readily amenable to the testing of more complex hypotheses than the independence of two variables. It was necessary to test the hypotheses that the two variables (of respondents' attitude and parental presence at the interview) were independent although their marginal totals may be dependent on a third variable (the sex and age of the respondents). This is analogous to the calculation of a partial correlation coefficient.

³ Significance levels of .1 were used in this instance and in the case above because of the discrete nature of the binomial distribution—i.e., 1, 2, 3, etc., significant results. The next highest criterion level was felt to have been too severe a requirement. That is, the probability in the first example, of four or more significant statements in 11 = .018, whereas p (three or more in 11) = .089. In the second instance p (three or more in five) = .008, whereas p (two or more in five) = .082.

range of social institutions. The two statements where parental presence significantly affected responses were concerned with the desirability of a newly married couple living with their parents and the extent to which a young man should defy his parents or accommodate to their wishes with regard to the choice of a job. In these two instances it is likely that parental presence affected the way respondents replied because of the "immediacy" and relevance of these statements to the relationship between the young adults and their parents. Such questions as these are likely to be the very issues which have arisen in their families in the immediate past. The statements where parental presence did not significantly affect the responses are, on the other hand, less "immediate," less likely to be a matter of contention and debate in the family, concerning as they do such matters as the control of children, unmarried mothers, trade unions, the police, and attitudes towards work.⁴

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⁴ The exact wording of the 11 statements may be found in Chaney and Podmore (1, pp. 60-63, statements 5, 10, 11, 18, 19, 24, 26, 32, 34, 35, and 39).

PERSONALITY SIMILARITY AND INTERPERSONAL ATTRACTION IN THE COMPUTER DATING SITUATION*

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SUMMARY

Couples were matched in a "computer dating" study to examine the efficaciousness of the similarity hypothesis in fostering interpersonal attraction. One hundred ninety-eight couples were matched on the personality dimension of extraversion and 200 couples were matched on neuroticism. The experimental design was a 3×3 factorial design with low, moderate, and high degree of possession of the trait representing the facets for both male and female subjects. Some support for the similarity hypothesis was demonstrated.

A. INTRODUCTION

Recent attempts to test the potency of the similarity-interpersonal attraction relationship in computer dating studies have produced inconsistent results. Coombs (4) paired subjects for a computer dance on a similarity-dissimilarity dimension. Attitudinal similarity was significantly related to attraction toward the date. In a study by Byrne, Ervin, and Lamberth (2) subjects were again matched on the basis of attitudinal similarity. Subjects were informed of their degree of attitudinal similarity and were then sent to the student union on a 30-minute "coke-date." Significant positive correlations were subsequently found between attraction and proportion of attitudinal agreement. In a design involving random pairing of individuals at a computer dance, Walster, Aronson, Abrahams, and Rottman (12) found that the major determinant of a subject's liking for his date was the date's physical attractiveness. No support was found for the hypothesis that subjects would be more attracted to partners of similar social desirability. Curran (6) matched subjects on 26 traits for a computer date on a similarity-dissimilarity continuum. The data failed to support the

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hypothesized relationship between trait similarity and interpersonal attraction. However, a significant positive relationship was established between item agreement and a couples' interpersonal attraction.

While the above mentioned studies do seem to support the similarity-attraction relationship for attitudinal agreement, there is no such evidence for broader personality traits. This study attempted to test the efficaciousness of trait similarity in fostering attraction in the dating dyad. In addition, special consideration was given to the methodological issues raised by Wright (13, 14, 15). Wright stated that the hypothesized relationship between personality similarity and interpersonal attraction may be in part an artifact of the analytical procedures used in those studies. He stated that both the use of "gross between person correlations and global measures of profile similarity have made it difficult to distinguish between fact and artifact" (13, p. 134). He has demonstrated that the relationship between personality similarity and attraction can be, at least partially, a result of the fact that by and large most people may be attracted to someone who possesses a given intensity of a certain trait independent of their own possession of the trait. For example, in one study Wright (13) found a relationship between similarity in the trait of formality and attraction preferences. Upon further analysis of the data, however, it was apparent that most subjects tended to choose associates who were low on formality. For half the subjects this was tantamount to choosing associates similar to themselves. Hence the similarity effect was contributed by those subjects who were themselves low on formality. This effect shall be referred to as the "popular man" effect.

Wright (14) recommended two procedures useful in controlling for this confounding: (a) treat the dependent measure of attraction in a more quantified way rather than as a dichotomous variable; and (b) divide the subject group into high, medium, or low similarity and analyze the differences in attraction scores between groups.

In this study an attempt was made to test the effects of personality similarity on the attraction process in the dating situation. An effort was made to tease out the confounding effect of the "popular man" hypothesis from the similarity hypothesis.

B. METHOD

1. *Subjects*

Undergraduate and graduate students from a Midwestern university served as subjects in the study. Subjects were recruited for a computer

dating study by means of advertisements. A total of 1101 subjects (398 females and 703 males) responded to the advertisements. Subjects attended one of eight predate testing sessions where they were administered the predate questionnaire.

2. *Procedure*

For the purpose of this experiment a computer dating service was established in order to match subjects for a date. The subjects reported to a predate testing session which lasted approximately 90 minutes. The dating service procedure was explained to the subjects, and they were administered a number of questionnaires. To protect against subject attrition, subjects were charged an initial \$2.50 fee for the dating service, and at the end of the study subjects were refunded \$2.00 if they went out on the date and completed the postdate dependent measure of interpersonal attraction.

Approximately two weeks after the last predate testing session, subjects were notified of their date's name, address, and telephone number by means of a postcard. It was the responsibility of the dating couple to arrange for the date, and no restrictions were placed on the specific activities engaged in on the date. The postdate dependent measure was to be filled out immediately after the date and mailed back to the experimenter.

3. *Measures*

The Eysenck Personality Inventory—EPI (7)—was administered as the independent measure. This instrument was selected because of its two pervasive and independent dimensions (extraversion and neuroticism) and the apparent relevance of these dimensions to the interpersonal dating situation.

The postdate dependent measure was the interpersonal attraction (IA) scores obtained from the Date Evaluation Scale (5, 6). This scale consists of 50 items dealing with several dimensions of dating behavior, such as the amount of time spent on the date, the degree of physical contact, the amount of enjoyment obtained from the date, etc. This measure has been used in four separate studies and has been factor analyzed in these studies. It is comprised of seven factors. The pertinent factor to this study is the interpersonal attraction factor. This factor consists of 10 items which deal with the enjoyability of the date, degree of liking the dating partner, desire to date partner again, desirability of the date as a marriage partner, etc.

The loadings of these items on the IA factor range from .69 to .91 with a mean loading of .80.

Evidence for the construct validity of the Date Evaluation Scale may be found in a study by Mendelsohn (9). Participants of a recent computer dating study were contacted by telephone and asked whether they had subsequent dates with their matched partner. Correlation coefficients between the scores on the Date Evaluation Scale and subsequent dates with the matched partner were .75 for males and .80 for females.

In addition to the EPI and Date Evaluation Scale (DES), important demographic information, including age, height, educational level, etc., was obtained during the initial predate testing sessions. Also at that time five trained undergraduate judges rated each of the subjects on physical attractiveness. The judges' mean rating was used in the computer matching program, as described below.

4. *Experimental Design and Matching Proceedings*

In the matching, 198 couples were matched for personality dimension of extraversion and 200 of the couples were matched for the neuroticism dimension. The experimental design involved three levels (low, moderate, and high) for each of the personality variables of extraversion and neuroticism.

A 3×3 factorial between-subjects design was formed for couples matched for extraversion and those subjects matched for neuroticism. Approximately one-third of the females in the low extraversion group were randomly chosen to be matched with males in the low extraversion group, approximately one-third with the moderate males, and approximately one-third with the high-extraverted males, etc.

The effect of the degree of possession of a trait, "popular man" hypothesis, could then be tested via a main effect analysis of variance. The similarity and dissimilarity hypothesis could be tested via planned comparisons (8) of specific cell means.

Three other conditions were met in the matching programs: (a) the male was as old or older than the female; (b) the male was taller than the female; (c) the male and female were approximately the same in physical attractiveness (less than 1/2 point on a five-point scale) as rated by the independent judges. These variables have been reported (1, 10, 12) to significantly influence the interpersonal attraction process in the dating dyad. These variables were controlled in order to isolate better the effects of the personality variables and the attraction hypothesis on the attraction process.

C. RESULTS

1. *Test for Popular Man Hypothesis*

Out of the 398 couples matched, 337 males and 375 females returned the Date Evaluation Scale. For an individual's attraction score toward his (her) partner, all subjects who returned the dependent measure were used. Each subject's responses to the 10 interpersonal attraction items were summed to indicate his (her) attraction for his (her) date. The attraction scores ranged from 16 to 49. The mean male attraction score was 33.6. The mean female attraction score was 30.8.

Table 1 contains the individual cell means for the attraction scores for those couples matched for extraversion. A 3×3 analysis of variance was conducted and provided no support for the "popular man" hypothesis. The main effect of females differently liking males of various degrees of extraversion was nonsignificant ($F = 2.24$, $p = .10$). The main effect of males differently liking females of different degrees of extraversion was nonsignificant ($F = .11$, $p = .89$).

Table 1 also contains the individual cell means for those couples

TABLE 1
MEAN ATTRACTION SCORES FOR COUPLES MATCHED ON EXTRAVERSION AND NEUROTICISM

Male categories	Female categories		
	Low	Moderate	High
<i>Extraversion</i>			
Low	<i>Cell 1</i>	<i>Cell 2</i>	<i>Cell 3</i>
Male	34.40 (20)	33.55 (18)	34.93 (15)
Female	31.36 (22)	28.85 (20)	26.64 (14)
Moderate	<i>Cell 4</i>	<i>Cell 5</i>	<i>Cell 6</i>
Male	34.18 (22)	33.56 (23)	33.25 (16)
Female	32.40 (25)	31.64 (25)	30.55 (20)
High	<i>Cell 7</i>	<i>Cell 8</i>	<i>Cell 9</i>
Male	30.57 (14)	33.94 (17)	32.55 (18)
Female	28.50 (18)	34.71 (21)	30.33 (21)
<i>Neuroticism</i>			
Low	<i>Cell 1</i>	<i>Cell 2</i>	<i>Cell 3</i>
Male	31.44 (16)	33.39 (23)	31.17 (12)
Female	28.65 (17)	32.00 (22)	30.75 (12)
Moderate	<i>Cell 4</i>	<i>Cell 5</i>	<i>Cell 6</i>
Male	35.56 (16)	33.67 (24)	31.10 (20)
Female	33.00 (19)	30.53 (28)	28.18 (22)
High	<i>Cell 7</i>	<i>Cell 8</i>	<i>Cell 9</i>
Male	35.29 (17)	34.13 (30)	35.78 (16)
Female	30.70 (20)	31.94 (32)	28.76 (17)

Note: Numbers within parentheses = number of subjects. "Male" and "Female" row labels refer to males' and females' interpersonal attraction toward date, respectively.

matched for neuroticism. Again, no support was found for the "popular man" hypothesis. The main effect of male attraction toward the female produced an F ratio of .82 ($p = .56$) and of female attraction toward male an F ratio of .00 ($p = .99$).

2. *Test of the Similarity Hypothesis*

The effect of similarity of personality characteristics on attraction within the dating situation was tested by a series of planned comparisons (8) between the high, moderate, and low similarity matched couples. For the purpose of these analyses, the high similar group was defined as the three groups where the dating partners were either both low, both moderate, or both high on extraversion or neuroticism (cells 1, 5, and 9 in Table 1. The dissimilar group consisted of cells 3 and 7 in Table 1. Here one of the dating partners is high on the trait and the other is low. The moderately similar group consisted of the remaining four cells—2, 4, 6, and 8.

There were two significant planned comparisons. Females who were in the high and moderately similar groups for extraversion were significantly more attracted to their dates than those females who had dissimilar dates.

D. DISCUSSION

Some support for the similarity hypothesis was found. Females preferred males who were very similar or moderately similar to themselves on the extraversion dimension over males who were dissimilar. Males' preference for females was not affected by their degree of similarity on the extraversion dimension. Both Byrne, London, and Reeves (3) and Stroebe, Insko, Thompson, and Layton (11) have presented data which indicate that females were more effected by personality similarity in their liking of others than males.

No support was demonstrated for Wright's (14) "popular man" hypothesis. However, it is felt that in deference to Wright's (13, 14) data the controls suggested by Wright ought to be implemented in interpersonal attraction studies.

The attenuation of the potency of the similarity hypothesis in this field of study is most probably a function of the operativeness of important uncontrolled variables. No controls were exercised over certain demographic characteristics (socioeconomic class, etc.), situational variables (location of date, etc.), or other personality factors. The loss of stringent controls is the price paid in conducting field studies in search of greater ecological validity. However, both types of studies are needed. Laboratory studies are

necessary in order to delimit more stringently the nature of the relationships under study. Field studies are necessary to generate hypotheses and test the logical substantiveness of our laboratory work.

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INTERPERSONAL DISTANCE AS AFFECTED BY ROOM SIZE, STATUS, AND SEX*¹

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SUMMARY

The relation between room size and interpersonal distance as manifested in a seated conversation, as well as the effects of the sex and relative status of the speakers upon this distance, are examined. Subjects ($n = 80$) were asked to interact singly with one of 12 confederates in varying combinations of room size, status, and sex conditions. As predicted, the size of this interpersonal distance was inversely related to room size. A perceptual-behavioral threshold for room size was suggested, as it was also noted that the distance scores in the small room were distributed bimodally as opposed to the unimodal scores in the large room. Neither status nor sex was found to affect interpersonal distance consistently.

A. INTRODUCTION

The last decade has witnessed rapid growth in research interest concerned with the human use of space. Although information in this area has markedly increased, especially with regard to American subjects, inconsistencies in research findings have continued to plague spatial theorists. For example, as early as 1962 Sommer's findings of preferred conversation distances in rooms differing greatly in floor areas suggested that two seated people engaged in conversation would tend to sit closer in a large room than in a small room (5). Using varying arrangements of four preplaced chairs, he found that subjects preferred face to face seating, unless the distance between them exceeded a commonly held norm for comfortable conversation distance. Sommer went on to suggest that this preferred

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conversation distance varied inversely with room size. However, Harford (2) has reported more recent findings which were contrary to Sommer's expectations and has suggested a curvilinear or positive function to be more accurate in describing this relation.

The present study is an attempt to explore the relationship between room size and interpersonal distance, particularly as it is affected by the sex and relative status of the speakers. Although a number of investigators (1, 2, 5, 6) have dealt with the main and/or interaction effects of sex and status, relatively little is known of their influence in combination with room size.

One reason for the conflicting findings may lie in the nature of the rooms in which the observations have been made. Even though Harford's "small" room (8.8×10.2 feet) approximated the size of the small rooms Sommer used (which the latter described as "standard sized" living rooms), his "large" room (13.5×13.7 feet) was much smaller than the large room used by Sommer (46.0×48.0 feet). Thus, whereas Sommer compared an area ratio of 1:18 for his small room and large room, Harford dealt with a ratio of only 1:2. As the present study shows, even a small difference in this ratio can have a marked effect on both the mean and the frequency distribution of measures of interpersonal distance.

B. METHOD

The procedure for observing interpersonal distance capitalized upon a preexisting collegiate counseling program. Recently admitted American college freshmen ($n = 80$; 40 males and 40 females) were asked individually to enter into a conversation with another person (an experimental confederate) and to discuss their opinions concerning the utility of the counseling program to them in planning their college careers. Subjects perceived this setting as a natural element in the sequence of interviews for the counseling program. They were not aware that observations were made of their spatial behavior. To preserve this effect all measurements were unobtrusive. Interpersonal distance between the individuals as they sat conversing served as the dependent variable. Independent variables consisted of room size, status equality or inequality of the speakers, and their respective sex.

The first of these independent variables was the size of the room in which the conversation took place (small room = 9×15 feet; large room = 15×30 feet). Status was varied by introducing the confederate to the subject in one of two ways: (a) as a student who, like the subject, had just been in the counseling program, and thus was of equal status with the

subject, or (b) as a research professor who was a nationally known expert in the area of student attitudes, and thus was of unequal status to the subject. Confederates of ages appropriate to their defined status participated in one of the two conditions. Ten confederates of equal status were each randomly assigned to four room size and sex combinations. Owing to difficulty in recruiting confederates of unequal status, only two (one male, one female) participated. Both of these individuals interacted with 20 subjects.

Subjects were first randomly assigned to different combinations of the independent factors: room size, status conditions, and sex of pairs (same or opposite). Next, the subject was asked to converse with the confederate, who was ostensibly knowledgeable about the counseling program. After being introduced, the subject and confederate were told to seat themselves and discuss their thoughts concerning the counseling program. Placed against the walls of the experimental room were two chairs, one of which the confederate always placed at a predetermined position near the middle of the room. The subject placed the other in a position of his own choice relative to the confederate's chair. The experimenter then excused himself for five to 10 minutes while the conversation took place. He then re-entered the room, noted the relative placement of the chairs occupied by the two, and terminated the conversation.

After this he escorted the subject to another room and asked him to complete a questionnaire which contained both legitimate questions about the value of the counseling program and concealed measures of subject perception of pertinent aspects in the experimental situation. Two of the questions consisted of semantic-differential scales measuring whether a subject was "comfortable-uncomfortable" and "at ease-anxious" in the experiment. A third scale dealt with whether the subject perceived the confederate as of "equal-unequal" status. While the subject was occupied with this questionnaire, the confederate measured chair to chair distance for the conversation in the experimental room, using a retractable steel measuring tape.

Interpersonal distance was defined as the horizontal nose to nose distance between the two seated speakers. Measurements of this distance were obtained as follows: First, the horizontal distance between the front legs of the two chairs was determined either by direct or indirect measurement. While actual direct measurement of the chair to chair distance was preferred, indirect measurement was resorted to in those cases (16 of 80) where chair positions were disturbed before direct measures could be made. The

indirect measure consisted of noting where the chairs were placed relative to the floor tiles and using these notations for subsequent reconstructions of chair positions. Measures taken in this fashion by an experienced observer correlated highly ($r = .97$) with the direct measure made with the measuring tape. Second, after the chair to chair distance was determined (directly or indirectly), predetermined estimates of the horizontal distances from the bridges of both the subject's and confederate's noses to the points directly above the front legs of their chairs were added to chair distance, their sum being the estimated nose to nose—i.e., interpersonal—distance. Three of these "correction factors" were available—one each for leaning forward, sitting upright, and leaning back positions. The position used most frequently by the subject determined which one of the correction factors was added to the chair to chair distance. The other factor added was the "leaning back" factor, since confederates were instructed to maintain this position during the conversation.

C. RESULTS

Data obtained from the questionnaire confirmed that subjects did perceive the experimental setting as a legitimate, nonthreatening element of their counseling program. A mean score of 2.41 for the "at ease-anxious" scale (1 = maximum at-ease; 9 = maximum anxious) and of 1.89 for the "comfortable-uncomfortable" scale (1 = maximum comfortable; 9 = maximum uncomfortable), showed subjects to be both comfortable and at ease with the situation and presumably with the interpersonal distance they maintained throughout the conversation. In addition, the perceived authenticity of the situation was confirmed by several informal remarks made by a number of subjects regarding how useful the conversation created by the "opinion survey" was to them. As a result, it may be assumed that data obtained from the experiment reflects normal behavior with regard to interpersonal distance between members of a seated dyad in such a situation.

The questionnaire also indicated that subjects ranked perceived confederate status on the semantic-differential scale ("equal-unequal status") as of two distinct classes (unequal status = 6.38; equal status = 1.49). Those confederates introduced as influential experts in the field of opinion research were seen by the subjects as people of very different status from their own. On the other hand, those confederates who were portrayed to the subjects as people just like themselves were seen as just that: average

people with whom the subjects might talk and even strike up a fleeting friendship.

Measures of interpersonal distance collected for this study were analyzed by the Mann-Whitney *U* Test (4). This nonparametric test was chosen because results from Bartlett's Test indicated that intergroup variances were not homogeneous, thus violating one of the assumptions needed for the originally planned analysis of variance. As shown in Table 1, room size was a significant factor affecting interpersonal distance. The relation found was inverse. Interpersonal distances in the large room (mean = 68 inches, mode = 50 inches) were much shorter than distances observed in the small room (mean = 76 inches, mode = 80 inches). Thus, as a main effect, room

TABLE 1
MANN-WHITNEY *U* TEST COMPARISONS FOR SELECTED TREATMENT LEVEL COMBINATIONS

Combinations	<i>U</i> value	<i>Z</i> score	Probability	Significant ($\alpha = .05$)
1. large room—small room	1058.0	2.4800	.0132	yes
2. equal status— unequal status	804.0	.0385	.7040	no
3. male confederate— female confederate	931.0	1.2605	.2076	no
4. male subject— female subject	1007.0	1.9918	.0466	yes
5. homogeneous sex pairs— heterogeneous sex pairs	868.0	.6540	.5156	no
6. equal status pairs, male confederate— unequal status pairs, male confederate	251.1	1.5959	.1118	no
7. equal status pairs, female confederate— unequal status pairs, female confederate	272.5	1.9611	.0500	yes
8. equal status pairs, male subject— unequal status pairs, male subject	203.0	.0812	.4180	no
9. equal status pairs, female subject— unequal status pairs, female subject	207.0	.2029	.8258	no
10. homogeneous sex pairs, unequal status— heterogeneous sex pairs, unequal status	382.0	.7574	.4532	no
11. homogeneous sex pairs, equal status— heterogeneous sex pairs, unequal status	214.0	.3787	.7114	no

size appears to have been a salient determinant of interpersonal distance. However, there were no cases of significant interaction effects involving room size and other factors.

The *variances* of interpersonal distance also were greatly affected by room size. While the variance in the large room was 635.38, the small room variance was only 157.08. This difference was statistically significant ($F = 4.05$; $p = .01$). Further examinations showed that scores in the large room across all conditions tended toward bimodality, with a large cluster of scores ($n = 32$) centering around 50 inches and a smaller cluster ($n = 8$) around 110 inches, a difference between the two of approximately five feet (see Figure 1). In the small room, on the other hand, scores were unimodal and tended to cluster around 80 inches. In short, while the bulk of scores in the large room were about 30 inches (two and one-half feet) shorter than in the small room, a smaller group of scores in the large room *exceeded* those found in the small room by about the same distance. Hence, the inverse relation was not without exception, the distributions of interpersonal distance scores being greatly affected by room size.

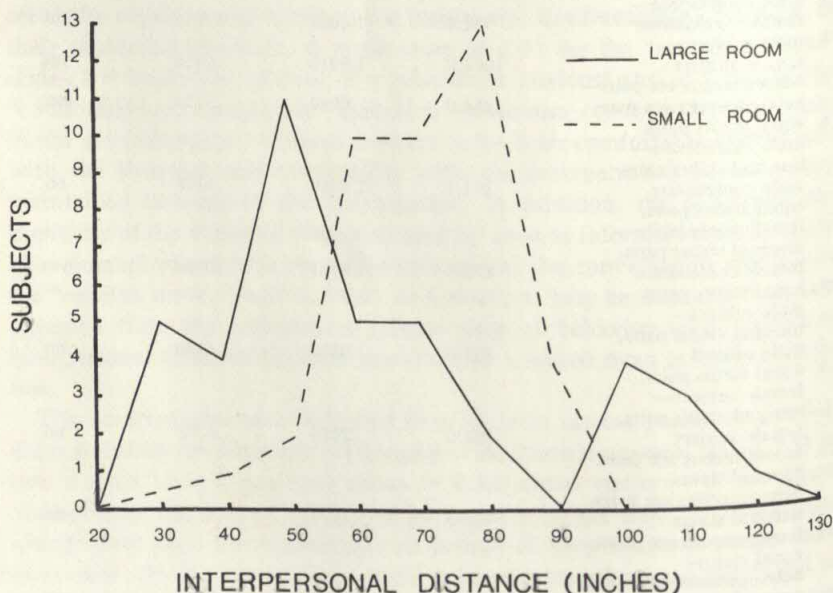


FIGURE 1
FREQUENCY DISTRIBUTION OF INTERPERSONAL DISTANCES

As shown by Table 1 status taken by itself did not affect interpersonal distance significantly. This was true even though subjects did make a perceptual distinction between the two status conditions held by confederates. Such a finding is puzzling, given the findings reported by several other studies which would have suggested a much greater distance between persons of unequal status than between those of equal status. Yet, it must be recalled that in the present study only two unequal status confederates were employed, hence their personal idiosyncracies may have unduly influenced the unequal status condition. Such a possibility appears probable, since status of the female confederate pairs produced a significant effect (see Table 1; #7), whereas status of the male confederates did not (see Table 1; #8). The direction of this effect was such that subjects sat more than one foot farther away from the unequal status female confederate ($\bar{x} = 74.44$ inches) than from the equal status female confederates ($\bar{x} = 63.81$ inches). On the other hand, subjects sat much *closer* to the male unequal status confederate than to the equal status confederate. Such an outcome could indicate that personality differences between the male and female who served as unequal status confederates confounded subject reaction to their status and subsequent interpersonal distance. Other than this interaction there was no significant effect with regards to status.

Sex of confederate did not significantly affect interpersonal distance, except in interaction with status as just cited. Again it is likely that the outcome was confounded by the fact that only one unequal status confederate of each sex participated in the experiment. Such a possibility is suggested by the finding that while the main effect for sex of confederate was not significant, the main effect for sex of subject was. Moreover, the direction of the effect was in the direction indicated by other studies with male subjects sitting farther from the confederates ($\bar{x} = 76.18$ inches) than did female subjects ($\bar{x} = 68.31$ inches). Thus sex of the subject was an important factor in determining interpersonal distance.

D. DISCUSSION

Sommer's proposed (5) inverse relation between seated conversation distance and room size is given at least partial support by the findings. Modal differences between rooms indicated a striking inverse relation, with subjects sitting about 50 inches closer in the large room than in the small room. However, the results also indicate the relation to be far more complex than a simple inverse function. While subjects *on the whole* did indeed sit closer in the large room than in the small room, a sizable number

of subjects in the large room (8 of 40) sat farther apart than *any* of those in the small room. Thus while Sommer's proposal is supported in the main, a number of distances deviated from this trend sufficiently to warrant a careful re-examination of the positive relation described by Harford (2).

Resolution of Sommer's and Harford's findings may lie in a consideration of the observed split in behavior in the large room. This should be particularly true if the nature of the rooms themselves is considered. As noted before, the ratio of small room to large room floor area is an influential consideration in determining the nature of the function between room size and seated conversation distance. The rooms in the present study were 9×15 feet and 15×30 feet; an area ratio between the small and large room of 1:3.33. This ratio is intermediate to those used by Harford and Sommer. It is larger than that used by Harford (1:2), yet it is much smaller than that used by Sommer (1:18—estimated).

With the bimodal behavior found in the large room of the present study used as a guide, it would appear that there is a *threshold* for the inverse pattern of interpersonal distance to room size. This threshold occurs when the small room is about 9×15 feet in size and when the large room is approximately three times as large, a small-large room ratio of 1:3. When the ratio is less than this, subjects sit farther and farther apart, apparently trying to maintain a more or less constant relation between themselves and the physical boundaries of the room. But, when the ratio is greater than 1:3 something akin to a "critical mass" of area has been reached. At this point, an increasing percentage of subjects tend to sit closer and closer in an attempt to maintain a perceptually comfortable interpersonal distance. That this distance *decreases* is no doubt a result of both auditory and visual sensations diminishing relative to the increased room size. Screaming across a void does not make for comfortable conversation; rather than increase the volume, most people choose to decrease the void.

Unfortunately, in the present study the effects of status and sex in relation to room size are confounded. The only clear outcome was that females sat closer to confederates than males. The expected effects of status and sex of the confederates were found only for the female confederate. Sommer's and Harford's findings have not been adequately resolved. If anything, this study shows spatial behavior is more complex than might be first supposed.

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IMPLIED COMPETENCE, TASK COMPLEXITY, AND IMITATIVE BEHAVIOR*

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SUMMARY

Sixty undergraduates (28 male and 32 female) participated in an experiment to assess the effects on imitative behavior of task complexity with no knowledge of the model's competence at the task. Task complexity was manipulated by varying the probability of Ss making a given response by chance alone. Ss were informed of their "correctness" (reinforcement) on designated proportions of trials on which they imitated the model's response. Further, they estimated the competence of the model (implied competence) in proportion to the frequency of reinforcement received for matching responses. Implied competence significantly influenced matching behavior as did task complexity. Competence and complexity interacted so that the retarding effects of a complex task on learning of imitation were overcome by high levels of implied competence. Results are discussed in terms of reinforcement contingencies for imitative behavior.

A. INTRODUCTION

Many experiments have been directed to the question of what factors influence modeling behavior. It has been shown that verbalizing the model's behavior increases the influence of the model (3) and that the effect of the model depends to some extent on the model's perceived social power (1, 4). Social power, in turn, has been treated as competence of the model (13), status (9), or attraction (5).

In this investigation of imitative behavior we are concerned with that model who is portrayed as displaying some degree of competence. Typically, competence of the model has been defined with respect to success at the task (5, 10, 13, 14) or with respect to the reinforcements received by the model as he performs his task (2, 8, 15).

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The results of these studies indicate that an observer is more likely to imitate the behavior of a model who is perceived (or designated) as competent and rewarded for his behavior than he would a model perceived (or designated) as incompetent and not rewarded or punished. However, is it necessary for *S* to observe a model who is being reinforced for his behavior, and need *S* be made aware of the attraction, status, or competence of the model? That is, what is the situation when an *observer* is rewarded for imitating the behavior of a model on a particular task? We expect that the observer would estimate the competence of the model in proportion to the amount of reinforcement the observer receives for his imitation. A test of this hypothesis would involve differentially reinforcing observers for matching the responses of a model whose receipt of reinforcement is not observed. Subsequently, the observer would be asked to estimate the competence of the model. Thus, instead of relating competence to success on a task, competence is to be implied by the varying reinforcements received by an observer for making imitative responses on the assumption that learning of such responses involves a relationship between the reinforcement and the behavior rather than between the model's behavior and the behavior of the observer.

A second variable manipulated in this study was task complexity. Tasks were designated as "simple," where one discrete response was to be imitated by the observer (e.g., 5, 13) or "complex," where the observer was required to imitate a series of responses (4) in the same order in which those responses were performed by the model. It was hypothesized that a simple task (*S*) would lead to more rapid acquisition of imitative responses than would a complex task (*C*) and, further, that the extent of complex task imitation would reach that of simple task imitation as trials progressed.

B. METHOD

1. *Subjects*

Sixty undergraduates (28 males, 32 females) enrolled in sections of Introductory Psychology at the State University of New York at Albany participated in the experiment as part of a course requirement. Ten *Ss* were randomly assigned to each of six cells of a 2×3 factorial design with two levels of task complexity and three levels of reinforcement (implied model competence). No discrimination on the basis of sex was made in the assignment of *Ss* to treatment conditions following Baron's (5) finding that such a procedure produced no differential effects.

2. Apparatus

The apparatus consisted of two *S*-response boxes and a master control panel (the *E*-box). Each *S*-response box was 12-inches long by 8-inches wide by 6-inches high, painted flat black, and contained seven 120-volt, six-watt frosted light bulbs and four toggle switches. The stimulus panel represented two rows of lights and a row of toggle switches. The top row consisted of a white and red light labeled "choose" and "reset," respectively. The second row consisted of four blue lights separated at one-inch intervals. Below each blue light was a toggle switch, labeled, from *S*'s left to right, A, B, C, and D. An amber light, labeled "correct," was located one-half inch to the right of the "D" switch.

The *E*-control panel was 24-inches long by 8-inches wide by 6-inches high, painted flat black, and consisted of eight frosted light bulbs, five toggle switches and two push-button switches. The panel was divided into two parts, each part corresponding to an *S*-response box. The four lights on each section of the control panel indicated the choices of *S*s and the toggle switches enabled *E* to transmit information concerning choices and correctness of choice to *S*s. The pushbutton switches were used by *E* to inform *S* either to make a choice or to reset his panel.

3. Procedure

A simulated horse-racing situation was employed (5) with some modification. Two subjects participated in each experimental session. *S*s came to the experiment in pairs and were escorted by *E* into separate rooms and asked to sit at a table on which was situated an *S*-response box. Each *S* was told to read typed instructions taped onto the table next to the response box. The instructions indicated that the study was concerned with guessing behavior and that in order to study this behavior, each *S*, in partnership with the other, was to choose a winner in a horse race.

*S*s were also informed that a sign on the wall in front of him would indicate whether he would be Subject 1 (the model) or Subject 2 although both were informed that they were Subject 2. *E* then explained that the individual who was Subject 1 would make the first choice. He would wait until the white signal light, labeled "choose," came on in the top row of lights and then choose one of the four horses in the race by flipping the toggle switch labeled A, B, C, and D under any one of the four blue lights.

*S*s were then told that after Subject 1 had made his choice, Subject 2 would make his choice of a winner. He would wait for the white signal light to come on in the top row of his stimulus panel and would then make

his choice by flipping one of the toggle switches. After a short delay, he would be informed of the correctness of his choice by the amber light to the right of the "D" switch. If *S* were correct in his choice the light came on; if incorrect, the light stayed off. At no time was Subject 2 informed of the "correctness" of the choice made by Subject 1.

Although *Ss* were told that the blue lights on their panel represented the choices of their partners, in reality each *S* received information transmitted to him by *E* who was located in a third experimental room that contained the control panel. When *Ss* were signalled to choose a horse, their choices were indicated on the master control panel and *E* then supplied them with reinforcement (amber light) for their correct choices. *Ss*' choices were made while the choices of the model were still visible on the *S*-panel. After *Ss* chose, and after correct responses were reinforced, they were signalled to reset their switches (red light) and await the next trial.

a. Task complexity. A simple task (*S*) consisted of *S* being required to choose only one horse to win a race on each trial. For the complex task (*C*), *S* was required to choose the first, second, and third place finishers, in that order, on each trial. The choices of the model were randomly determined with each of 24 possible combinations of three of the four possible choices being presented once in every 24 trials to *S*. Each single choice of the simple task was presented six times in each of the 24 trials. To assess possible practice effects, a total of 96 trials were run.

b. Levels of reinforcement. Three levels of reinforcement were employed. High reinforcement (*HR*) was defined as information as to "correctness" of choice on 75 percent of those trials on which *S* imitated the choice of the model. Midreinforcement (*MR*) consisted of *S* being reinforced on 25 percent of imitative trials, and low reinforcement (*LR*) was defined as *S*'s being correct on 12.5 percent of the trials on which he imitated the model.

After *Ss* had completed the 96 trials, they were administered a questionnaire concerned with how competent they thought they and their partners were at the task. Specifically, they were asked to report the percentage of trials on which they would guess they had been correct in their choice and the percentage of trials that their partners were correct.

C. RESULTS

1. Imitative Behavior

Figure 1 presents the mean number of imitative responses made by *S* at two levels of task complexity over three levels of reinforcement. Inspection

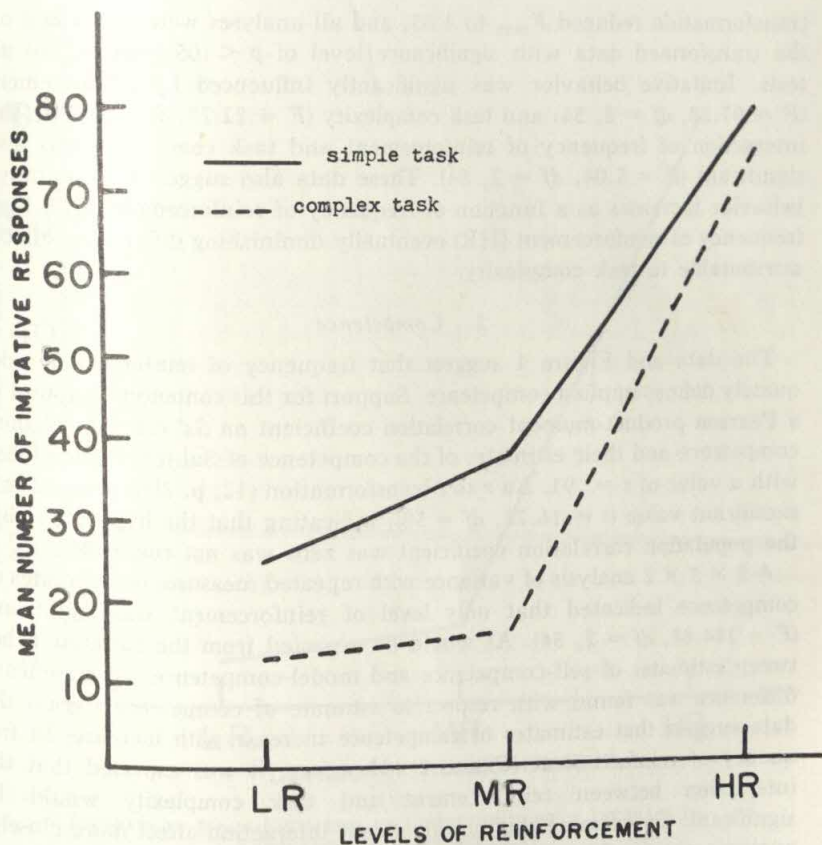


FIGURE 1

MEAN NUMBER OF IMITATIVE RESPONSES AT TWO LEVELS OF TASK COMPLEXITY
OVER THREE LEVELS OF REINFORCEMENT

of this figure suggests that imitative behavior increases with reinforcement for both simple and complex tasks with more such responses made on the simple task as opposed to the complex. It appears, too, that reinforcement and task complexity interact in influencing the level of imitation shown. Thus, differences in respect to mean number of imitative responses between simple and complex tasks for LR and MR groups are larger than differences between means for those Ss in the HR group.

Hartley's test for heterogeneity of variance was computed and resulted in F_{\max} greater than the tabled value of 7.80 for 6 and 9 *df*. A square-root

transformation reduced F_{\max} to 4.85, and all analyses were performed on the transformed data with significance level of $p < .05$ required for all tests. Imitative behavior was significantly influenced by reinforcement ($F = 97.28$, $df = 2$, 54) and task complexity ($F = 22.77$, $df = 1$, 54). The interaction of frequency of reinforcement and task complexity was also significant ($F = 5.04$, $df = 2$, 54). These data also suggest that imitative behavior increases as a function of frequency of reinforcement, with high frequency of reinforcement (HR) eventually diminishing differential effects attributable to task complexity.

2. Competence

The data and Figure 1 suggest that frequency of reinforcement adequately defines implied competence. Support for this contention is found in a Pearson product-moment correlation coefficient on Ss' estimate of their competence and their estimates of the competence of Subject 1 (the model) with a value of $r = .91$. An r to t transformation (12, p. 206) resulted in a significant value ($t = 16.72$, $df = 58$), indicating that the hypothesis that the population correlation coefficient was zero was not confirmed.

A $2 \times 3 \times 2$ analysis of variance with repeated measures on estimates of competence indicated that only level of reinforcement was significant ($F = 144.81$, $df = 2$, 54). As would be expected from the correlation between estimates of self-competence and model-competence, no significant difference was found with respect to estimate of competence. Again the data suggest that estimates of competence increase with increases in frequency of reinforcement (Figure 2). However, it was expected that the interaction between reinforcement and task complexity would be significant. To examine this nonsignificant interaction affect more closely, analyses were performed on the data for four blocks of 24 trials for simple and complex tasks (Table 1). Significant t values were found for differences between simple and complex tasks over all levels of reinforcement for the

TABLE 1
SUMMARY OF t TESTS FOR BLOCKS OF 24 TRIALS BETWEEN SIMPLE (S) AND
COMPLEX (C) TASKS ACROSS ALL LEVELS OF REINFORCEMENT

Blocks of trials	\bar{X}_s	\bar{X}_c	$\sigma_{\bar{x}}$	t	p
First 24 trials	3.18	1.96	.2916	4.18	<.05
Second 24 trials	3.34	2.52	.3249	2.52	<.05
Third 24 trials	3.35	2.61	.3406	2.17	<.05
Fourth 24 trials	3.30	2.80	.3507	1.42	>.05

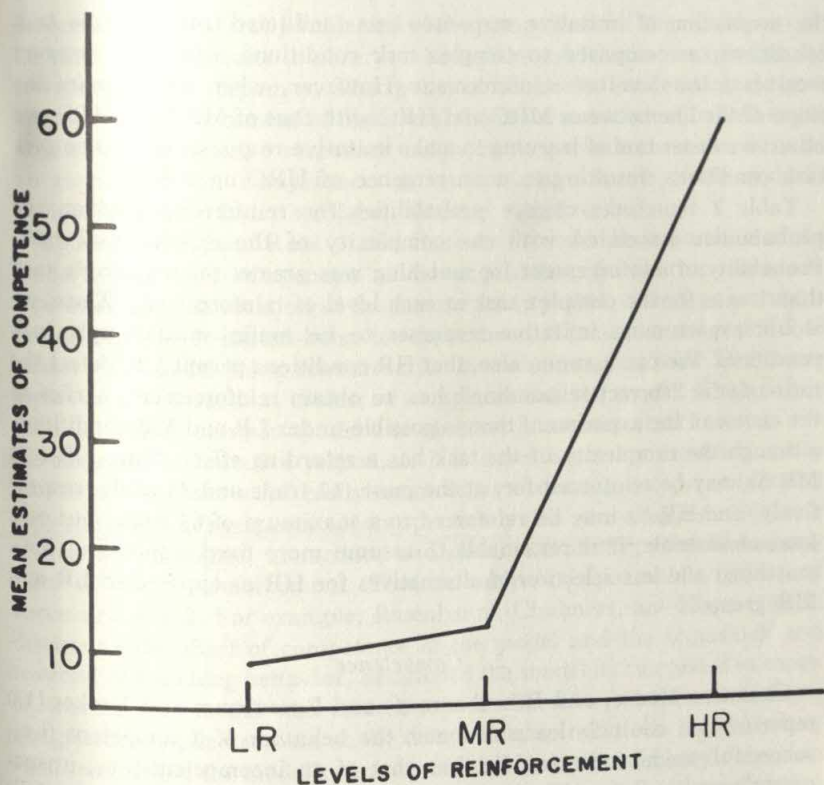


FIGURE 2
INCREASE IN MEAN ESTIMATES OF COMPETENCE WITH INCREASE IN
FREQUENCY OF REINFORCEMENT

first three blocks, but not for the last block of 24 trials. These data indicate the influence of practice effects in improving performance on the complex task and provide a possible explanation for the nonsignificant $A \times B$ interaction.

D. DISCUSSION

1. *Imitative Behavior*

The results of the present study support the hypothesis that a simple task is more conducive to the acquisition of imitative responses than is a complex task. Figure 1 indicates that during the early stages of acquisition,

the acquisition of imitative responses was facilitated under simple task conditions, as compared to complex task conditions, when the observer receives a low level of reinforcement. However, when we compare the slope of the line between MRC and HRC with that of MRS and HRS, we observe a faster rate of learning to make imitative responses under complex task conditions, resulting in a convergence of HRC upon HRS.

Table 2 represents chance probabilities for reinforcement given the probabilities associated with the complexity of the experimental task. Probability of reinforcement for matching was greater for the simple task than it was for the complex task at each level of reinforcement. Thus, we would expect more imitative responses to be made under simple task conditions. We can assume, also, that HR conditions permit *S* to detect the rationale for "correct responding": i.e., to obtain reinforcement, earlier in the course of the experiment than is possible under LR and MR conditions, although the complexity of the task has a retarding effect. Since LR and MR *S*s may be reinforced for, at the most, 12 trials and 24 trials, respectively, and HR *S*s may be reinforced to a maximum of 65 trials, out of a total of 96 trials, it is reasonable to assume more fixed responding (i.e., matching) and less selection of alternatives for HR as opposed to LR and MR groups.

2. Competence

Chalmers, Horne, and Rosenbaum (6) and Rosenbaum and Tucker (13) reported that adult *S*s learn to match the behavior of a competent (i.e., successful) model more rapidly than that of an incompetent (i.e., unsuccessful) model. Baron (5), for example, informed his *S*s that the model's choices and outcomes would be shown to the observer on each horse race. In the present study, the observer was never informed of the outcomes of the model's choices, although he knew the choice made, but was merely reinforced by *E* according to a prearranged schedule. Therefore, the ob-

TABLE 2
COMBINED PROBABILITIES FOR IMITATIVE RESPONSES

Task	LR	MR	HR
Simple ($p = .25$)	.031	.065	.188
Complex ($p = .04$)	.005	.010	.030

Note: LR = low reinforcement (*S* reinforced as "correct" on 12.5% of trials; MR = midreinforcement (*S* reinforced on 25% of trials); HR = high reinforcement (*S* reinforced on 75% of trials).

server was never directly informed of the competence of the model nor did he have the opportunity to observe whether the model was rewarded or not rewarded for his responses. The results of the present experiment demonstrated that reinforcement of observers' choices was sufficient to lead to the acquisition of imitative responses and, also, to provide the observer with an estimate of his competence, as well as an estimate of the model's competence. This latter we label "implied competence."

Bandura, Ross, and Ross (4) and Bandura (1) state the importance of the model's response contingencies on the acquisition of imitative responses. One interesting implication of the present study is that when an observer is brought into an imitation-behavior experiment, it is not necessary for *S* to observe the model being reinforced for his behavior, nor need *S* be made aware of the attraction, status, or competence of the model. Thus, while the relationship between model and observer is an important factor in the development of imitative responses, it is not a necessary condition, since imitative responses were easily acquired as a consequence of reinforcing only the observer's response. More specifically this study suggests that such terms as competence, attraction, and status essentially reflect the operations of simple reinforcement. That is, competence is usually defined as success on a task. For example, Rosenbaum, Chalmers, and Horne (14), in discussing the effect of competence of the model and the acquisition and reversal of matching behavior, designated the model as competent in terms of whether the model was correct or not. Therefore, for these authors, competence implied success at the task which, in turn, was designated by reinforcement of the model's choices. Status (9) may be similarly defined in that "high status" persons are perceived as those who have been rewarded in the past for their behavior, and attraction (5) may be defined in terms of the expectation of reinforcement. Studies using these terms may be doing nothing more than applying "social" labels to conditions of reward for correct responses. In the present study, no information about the model was given to the observer except that the model would make his choices first and that this information would be available to the observer. Subsequently, *S* was reinforced on one of three different schedules.

By thus providing some criterion for *S*'s evaluation of his own skill, we were able to evaluate the relationship between *S*'s evaluation of his own performance and his evaluation of the model's performance relative to *S*'s receipt of reinforcement. The more reinforcement *S* received, the more competent the model appeared and the greater the tendency of *S* to match the model's behavior. *S*s in this study, then, may be said to have estab-

lished a conceptualization of model competence based on their own response contingencies.

The role, then, that attraction, status, competence, and vicarious reinforcement may play with respect to imitative behavior in social settings is to initiate that behavior. That is, the behavior of a model (and perhaps the outcome of that behavior) may suggest a course of action or pattern for the observer to follow, but the response contingencies associated with modeling behavior determine whether that pattern of responding, once initiated, will be maintained (7).

Therefore, whatever the source of initially occurring imitative responses, the response contingencies associated with such responses will be more than sufficient to determine whether or not such behavior will endure. If children who observe a model behaving in an "aggressive" manner tend to respond to frustration with imitative "aggressive" responses, then skillfully implemented reinforcement procedures will produce changes in this behavior and facilitate the acquisition of more socially acceptable behavior. Imitating violent behavior seen on TV, for example, has a potential for enduring asocial or antisocial behavior only if the appropriate response contingencies are not applied as correctives.

In reviewing the literature on modeling behavior one notes that all or nearly all studies have been conducted with North Americans as subjects. One can then ask whether members of different cultural groups model their behaviors in ways similar or identical to those of North Americans, and with respect to the same determinants. Miller (11) has reported familiar evidence that differing cultures, particularly among underdeveloped peoples, have very different experiences in translating flat photographs to three-dimensional perception. In his discussion, Miller drops a rather pregnant surmise:

This is because cross-cultural research in this area has been somewhat of a hit or miss nature, with only a few attempts to develop a consistent research program for the investigation of any very specific hypotheses. . . . An adequate evaluation of cross-cultural differences certainly requires the examination of cultures from a broader sampling of the world (11, p. 148).

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THE EFFECT OF DEVIANT GROUP MEMBERSHIP UPON IMPRESSIONS OF PERSONALITY*

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SUMMARY

Personality impressions of a videotaped stimulus person were compared when he was introduced as a member of a homosexual group to when he was not. It was predicted that no differences would be found in overall attraction, but that the homosexual condition would elicit ratings consistent with a male homosexual stereotype. Results were consistent with the hypothesis; in the homosexual condition, the stimulus person was judged more feminine, emotional, submissive, unconventional, and weaker than in the nonhomosexual condition, but equally likable.

A. INTRODUCTION

Studies by Asch (2), Kelley (5), and Wishner (8) among others have indicated the power of certain personality characteristics to dominate impressions of personality. Their findings indicate that a simple additive model would not account for the wealth of connotation which some trait descriptive adjectives appear to carry. If we know a person is "warm" or "cold," that knowledge has an effect upon ratings of other personality characteristics (8). Similarly, if we know that a person is a member of a particular social group, we may already feel that a great deal about his personality, character, and abilities is known to us. Such social groupings as race or ethnicity and their attendant stereotypes have been especially well investigated (4). In a sense, membership in a minority group appears to have the same kind of effect upon ratings of personality attributes as the central traits studied by Asch (2) and others. The effects of membership in such deviant groups as homosexuals or criminals upon personality impressions is less well known.

This study was designed to assess the effect of homosexual group membership upon personality impressions. It is generally believed that

* Received in the Editorial Office, Provincetown, Massachusetts, on November 19, 1973. Copyright, 1975, by The Journal Press.

homosexuality is disapproved by Americans. In one recent survey (6) 60% of a sample of 3000 adults disapproved of sex acts between consenting adults of the same sex. Athanasiou, Shaver, and Tavis (3) report that 22% of a responding sample of *Psychology Today* readers think homosexuality is a character disorder or worse. And, 49% of the responding male homosexuals fear social disapproval. However, such gross data do not provide very much information about how general the effect of homosexual membership is upon impressions of personality. It is possible that knowing that a person is a homosexual would bias all judgments about him or only those which are reflected in the homosexual stereotype. It was hypothesized that likability (1) would not be affected by knowledge of homosexuality, but that judgments of personality on homosexual-sensitive personality dimensions would.

B. METHOD

The subjects were 20 student volunteers from the Claremont Colleges. Ss were randomly assigned to conditions.

Upon entering the experimental setting, Ss were seated so that they could view a videotape monitor. They were informed that they were to participate in a study of personality impressions. The purpose of the study was to compare their judgments of personality with the judgments of graduate students in clinical psychology in an attempt to discover whether clinical students were more sensitive judges of personality than the general college population. It was explained that Ss would view a videotape of a clinical interview that was used in clinical training. Following the tape, Ss would be given an opportunity to record their judgments.

Prior to viewing the tape, Ss were given one of two "Background Information" sheets so that they might have some idea of the stimulus person's background. It was explained to Ss that this procedure was analogous to receiving the kind of information which was elicited from clients during an initial interview. Two "Background Information" sheets were prepared. They were identical in all respects but one. Both gave demographic information about the stimulus person, high school and college data, family background, and so forth. Ten Ss received a sheet which indicated that the stimulus person had been a member of Gay Students Alliance while in college while the other 10 Ss did not. All Ss viewed the same taped interview prepared especially for this study. Thus, the only difference in conditions was whether or not Ss were told that the stimulus person had been a member of a homosexual group.

After viewing the tape, Ss were given a personality impression measure which consisted of 10 bipolar rating scales, each with seven rating categories. This was similar to a semantic differential (7), but the scales were different. Five of the scales (happy-unhappy, tolerant-intolerant, kind-unkind, flexible-rigid, and ambitious-unambitious) were chosen to reflect general personality characteristics which would not distinguish homosexuals from nonhomosexuals. For each scale, the first adjective in the pair is the more desirable or likable (1). The other five scales (strong-weak*, masculine-feminine*, emotional*-unemotional, dominant-submissive*, and unconventional*-conventional) were believed *a priori* to be sensitive to homosexual-nonhomosexual differences. Again, the first adjective in each pair is the most likable. The asterisked member of each pair represents the homosexual end of the scale.

C. RESULTS

The first analysis of the data compared likability ratings for each rating scale between conditions. Only two of the rating scales significantly differentiated between groups. The homosexual¹ was found to be more emotional ($t = 2.31, p < .05$) and more unconventional ($t = 3.88, p < .01$). When likability ratings were combined across the 10 rating scales, the homosexual was rated slightly more likable than the nonhomosexual but not significantly so ($t = .54, p > .25$). Apparently, likability or attraction for the stimulus person was not affected by knowledge that he belonged to a homosexual organization.

For the second analysis, the five homosexual rating scales were rescored so that a high score now reflected a rating toward the homosexual end of the dimension (weak, feminine, emotional, submissive, and unconventional). Ratings in the two conditions were compared for each of the five re-scored scales. In every case, the homosexual was rated higher (more homosexual) than the nonhomosexual. When the ratings on the five scales were combined, the difference between the two conditions was significant ($t = 4.39, p < .001$). Comparison of the total scores for the other five rating scales indicated no significant difference between the groups ($t = .37, p > .25$).

D. DISCUSSION

The results were consistent with the hypothesis that differences in personality impressions would be found only on homosexual-sensitive person-

¹ "The homosexual" refers to the stimulus person when viewed with prior information that he belonged to a homosexual organization.

ality dimensions. For this sample at least, a homosexual stimulus person is viewed as different, but not less attractive or likable, from a nonhomosexual stimulus person.

At this point, there is only anecdotal information regarding the effects of either dislike of homosexuals or perception of homosexuals as different upon overt behavior towards homosexuals. Whether or not persons who perceive homosexuals as different but no less likable than nonhomosexuals would treat homosexuals differently in key situations (e.g., employment) remains a question for further research. It may be that judgments of personality difference may just be a more subtle way of indicating disfavor and disrespect.

It does not seem that the findings in this study seriously challenge an additive model of personality impression formation. While it is true that the term "homosexual" effected ratings across a wide range of related dimensions, it seemed to do so in a linear manner. That is, ratings were shifted on all the relevant dimensions. For these dimensions, it would be necessary to add (or subtract) a constant in order to account for the shift, a procedure consistent with an additive model.

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THE APPLICATION OF KELLY'S PERSONAL CONSTRUCT THEORY TO THE ANALYSIS OF POLITICAL DEBATES*

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SUMMARY

Kelly's Personal Construct Theory is applied to the analysis of debates on internal African affairs in the South African House of Assembly. A bipolar dictionary was constructed to represent the alternatives as they are construed by members of the various white political parties in the House. Though the main constructs used by white politicians in the House of Assembly have been stable since 1948, the year in which the National Party came to power, members of the governing National Party have shown an increased awareness of change and have sought to base their policies on principles of national self-determination rather than on racial discrimination.

A. INTRODUCTION

Kelly's Personal Construct Theory (5) was used to analyze the "matrix of decision" (4) in a study of political debates in the House of Assembly in South Africa (2). Given that the system by which persons anticipate events is an organized finite number of dichotomized constructs (5), we can understand why men often continue to act in ways which seem futile and unproductive: the alternatives to current action, as they construe them, are worse. The only way out, if men are not to be bound by current alternatives, is to reconstrue the situation and change the matrix of decision.

B. METHOD

In the study briefly reported here and at greater length elsewhere (2) a dictionary of bipolar constructs was set up by reading every debate in the South African House of Assembly on Native, Bantu, or African affairs in the years 1948, 1958, and 1968. The advantage of such a dictionary is that

* Received in the Editorial Office, Provincetown, Massachusetts, on November 23, 1973. Copyright, 1975, by The Journal Press.

one gets a clear idea not only of the course of action favored, but of the alternative rejected. Some constructs are idiosyncratic; others would require considerable probing before the submerged pole could be discovered. The constructs of interest to this study were those which were commonly used by members of the House of Assembly and were therefore likely to make a political impact.

C. RESULTS AND DISCUSSION

A short list of 46 constructs accounted for 90% of the tokens in 685 speeches. The frequency with which different constructs were used to grasp South African reality varied from party to party. Whereas the construct most frequently used by government politicians was white survival *versus* loss of autonomy, culture, and even life, the construct most frequently used by opposition spokesmen of the United Party was that of economic efficiency *versus* impractical ideology. Political choices have extended and defined these constructs by converting them into policy and law, just as, in Kelly's choice corollary, the person chooses that alternative in a dichotomized construct system through which he anticipates the greater possibility of elaboration of his construct system (5, p. 64). These constructs have remained stable since 1948, the year in which the National Party came to power. It has remained in power ever since.

What has changed is the government's model of political relations in South Africa. The units are no longer races, they are nations, and South Africa is multinational rather than multiracial for the purposes of political decision. A problem, from the government point of view, is that this introduces contradictions; racialism justifies compulsory social segregation, whereas multinationalism does not. To cope with this, a new superordinate construct has been introduced: international-intranational. When an event is international, limited forms of social mixing are permitted and racial distinctions are temporarily allowed to lapse. Black competitors in an international event are allowed to live in white areas and mix with white persons on terms of equality for the duration of the event. Similarly, approved black dignitaries from other countries including the black homelands in South Africa are accorded white privileges for limited periods of time. Racial inequality may now be applied at the domestic level without contradicting a policy of cooperating on equal terms with blacks from other countries, including the "homelands" of South Africa which are being prepared for self-government by blacks.

This study attempted to construct an index of awareness of change by

computing the mean number of reasons given for opinions and policy statements. Where events are construed in a pre-emptive manner, no alternatives are seen; but where events are construed propositionally, there must be argument. To put it another way, actions or opinions which are self-evident require very little reasoning, whereas an awareness that there are alternatives requires demonstration of the reasons for selecting any particular course of action. This links up very closely with the treatment of prejudice in Kelly's theory (1).

The conviction of the governing party that its actions do not require justification to those who matter may be assessed by studying the trend of supporting argument through the three periods sampled. Any changes in the frequency of argument for policy would indicate that policy is becoming more or less problematic and is no longer a reiteration of self-evident truths. Argument depth in this study was calculated by dividing the number of tokens into the number of connections. This is illustrated below, using a simple argument:

recognizing nationalism (implies) creating separate homelands
erosion in the reserves (implies) ?

This argument occurs in the same speech. The first part of the argument is clear, but the second peters out. Three tokens are scored, but only one connection: the implication in the first line. The argument depth is given by this formula: number of connections divided by number of tokens, or one divided by three, or .33. The changes in argument depth are given in Table 1.

Two things are striking about this set of figures: Government speakers produce more connected arguments in recent than in former years; and the opposition parties all produced more connected argument than the governing National Party. A χ^2 test for uniform distribution in the scores of the

TABLE 1
MEAN DEPTH OF ARGUMENT

Year	National Party	United Party	Native Representatives ^a	Progressive Party ^b
1948			.44	—
1958	.17	.36	.36	—
1968	.22	.34	—	.41
Mean	.32	.37	.40	.41
	.24	.36		

^a Three members of the House of Assembly represented the interests of native blacks. (These "native representatives" were abolished in 1959.)

^b The Progressive Party was established in 1959.

National Party yields a χ^2 of 5.02 ($p < .05$). It would seem, therefore, that the trend towards connected argument is significant.

The objection may be raised that the study of constructs revealed in public debate is not within the domain of social psychology, since what men do in public does not reveal the way they really construe events, and it is these "real" constructs that psychologists ought to discover. The reply to this is that there is no simple difference between what is personal, private, and presumably "real," and what is public. A person filling in a questionnaire or being interviewed in the most private and confidential setting is communicating his attitudes to an audience. His act is public. What we see, in each case, is the way in which responses are made for particular audiences. There are no "real" attitudes, or constructions of events, independent of the social environment in which they are displayed, precisely because we are dealing with a feedback and feedforward system engaged in appraising the environment and altering its settings as a function of this appraisal. Very often, where there are many vocabularies of motives, where there is a sharp distinction between public and private life, or where there are no audiences for particular impulses or motives, it is difficult for any observer to know what the person's motives are (3).

Perhaps social psychologists ought to study public records as readily as they study TAT responses, dreams, or behavior in traffic. Records often extend over long periods and allow a depth of study not usually possible in social psychological research.

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4. KELLY, G. A. Europe's matrix of decision. In Jones, M. (Ed.), *Nebraska Symposium on Motivation (Vol. 10)*. Lincoln: Univ. Nebraska Press, 1962. Pp. 83-123.
5. ———. *A Theory of Personality: The Theory of Personal Constructs*. New York: Norton, 1963.

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CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, 95, 271-272.

DISCRIMINATION AND JOB SATISFACTION: AN EMPIRICAL STUDY WITH A SOUTH AFRICAN MINORITY GROUP*

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Merton¹ proposed that anomic conditions exist where there is a perceived imbalance between norms that define socially approved goals (ends) and those that define the appropriate channels for reaching these goals (means). This disjunction characterizes the pattern of discrimination imposed by the ruling White elite on the Coloured minority group in South Africa. For instance, Coloureds are encouraged to seek the same success goals as Whites, but face discriminatory laws that make the attainment of these goals impossible.² Hence, with education and nature of job held constant, Coloured workers in South Africa should feel significantly less job satisfied and more alienated than White workers.³

To test these predictions, 62 Coloured accounting clerks and 73 White accounting clerks (whole mean number of years at high-school was the same) were given (a) a 16-item alienation scale, consisting of those items in

* Received in the Editorial Office, Provincetown, Massachusetts, on December 7, 1973.

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¹ Merton, R. Social structure and anomie. In R. Merton, *Social Structure and Social Theory*. Glencoe, Ill.: Free Press, 1949.

² Marais, J. S. *The Cape Coloured People 1652-1937*. Johannesburg, South Africa: Witwatersrand University Press, 1957; and Thompson, L. M. *Politics in the Republic of South Africa*. Boston, Mass.: Little Brown, 1966.

³ Battle, E., & Rotter, J. B. Children's feelings of personal control as related to social class and ethnic group. *J. Personal.*, 1963, 31, 482-490; also Orpen, C. Internal-external control and perceived discrimination in a South African minority group. *Sociol. & Soc. Res.*, 1971, 56, 44-48; and Blauner, R. *Alienation and Freedom*. Chicago, Ill.: Univ. Chicago Press, 1964.

the Neal and Rettig⁴ factor analytic study which loaded most heavily on their general "alienation factor"; (b) the widely used index of job satisfaction, developed by Brayfield and Rothe⁵; (c) an eight-point self-rating scale of job satisfaction; and (d) an eight-point self-rating scale of perceived discrimination, which required Ss to indicate the extent to which they felt "society denies you fair opportunities to reach your goals in life."

Mean scores for the Coloured sample were significantly higher than for the White sample for perceived discrimination ($M = 6.8$, $SD = 2.0$ vs. $M = 4.2$, $SD = 1.2$) and alienation ($M = 20.2$, $SD = 5.4$ vs. $M = 17.1$, $SD = 4.3$). However, for job satisfaction the White sample had higher scores on the index ($M = 74.6$, $SD = 13.7$ vs. $M = 63.4$, $SD = 14.1$) and the self-rating measure ($M = 5.9$, $SD = 1.4$ vs. $M = 5.2$, $SD = 1.9$). For both samples, the correlations between alienation and job satisfaction were significantly negative ($p < .01$) when the latter was measured by the index (Coloured $r = -.39$; White $r = -.32$) and by the self-rating scale (Coloured $r = -.43$; White $r = -.31$). The correlations between alienation and the self-ratings of perceived discrimination were significantly positive in the Coloured sample ($r = .37$, $p < .01$) and the White sample ($r = .25$, $p < .05$).

These results suggest that feelings of alienation are related to the perception of disjunction between the norms defining appropriate "ends" and those defining appropriate "means" and have negative consequences for job satisfaction. They indicate that any conceptualization of job satisfaction which does not explicitly recognize the importance of the workers' reactions to wider societal factors, like discrimination, is likely to prove inadequate.

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⁴ Neal, A. G., & Rettig, S. On the multidimensionality of alienation. *Amer. Sociol. Rev.*, 1967, 32, 54-64.

⁵ Brayfield, A. H., & Rothe, H. An index of job satisfaction. *J. Appl. Psychol.*, 1951, 35, 307-311.

COOPERATION VERSUS COMPETITION: A COMPARISON OF ANGLO-AMERICAN AND CUBAN-AMERICAN YOUNGSTERS IN MIAMI*

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Everyone faces pressures in life and no one escapes the pressures of competing with others in the educational, domestic, and occupational arena, trying to meet the rapid demands of modern life. Many studies have been done of the subject of competition. Shapira and Madsen¹ found that there was a difference in the cooperative behavior of boys and girls from the urban sections of Israel.¹ In two other studies it was found that the educational and social influences in the subcultures tested produced different tendencies to cooperate or to compete.² However, none of the studies referred to emphasized the results of different age groups. Because of this, the *Es* tested the effect of three different age levels—17-year-old seniors, 13-year-old eighth graders, and 10-year-old fifth graders—on the cooperative and competitive behavior of Anglo-Americans and Cuban-Americans. In the present experiment 32 groups of four *Ss* each were tested. From these, 24 groups were randomly selected, eight groups included within each age factor (four groups within each nationality). A total of 96 students were selected from six schools in Miami—two schools within each age level. In the six schools tested the teachers were American born, and the language of instruction was English. The *Es* could not separate those Cubans born in Cuba from those born in the U.S.

Two Madsen Cooperation^{1,2} boards were used to test cooperation and competition. The cooperative and competitive sequences were allotted three one-minute trials each. Four *Ss* were assigned randomly to each Madsen Board. These *Ss* stayed together for both cooperative and competitive sequences. The Madsen Cooperation board was chosen as the testing

* Received in the Editorial Office, Provincetown, Massachusetts, on December 13, 1973. Copyright, 1975, by The Journal Press.

¹ Shapira, A., & Madsen, M. C. Cooperative and Competitive Behavior of Kibbutz and Urban Children in Israel. *Child Devel.*, 1969, 40, 609-617.

² Madsen, M. C., & Shapira, A. Cooperative and Competitive Behavior of Urban Afro-American, Anglo-American, Mexican-American, and Mexican Village Children. *Devel. Psychol.*, 1970, 3, 16-20.

apparatus because all three age groups could comprehend and enjoy the game without the pressure of a testing situation.

Analysis of variance for repeated measurements revealed a significant effect for nationality ($F = 17.332$, $df = 1/18$, $p < .001$), with the Anglo-Americans cooperating to a greater extent than the Cuban-Americans. The trials by nationality interaction was significant ($F = 15.3024$, $df = 1/18$, $p < .005$). In the competitive sequence the Anglo-Americans increased their rate of cooperativeness, while the Cuban-Americans decreased. The age by nationality interaction approached significance ($F = 2.6910$, $df = 2/18$, $p < .10$). It was found that as age increased cooperative behavior increased for both nationalities. The difference in performance between these two nationalities can be attributed to social reinforcement for competitive or aggressive behavior in the Cuban community in order to reach acculturation. As Cuban children become acculturated to American culture and the American educational system, they learn that cooperation is a necessary factor for group cohesiveness and advancement.

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CHANGE IN INTERCASTE ATTITUDES IN NORTH INDIA BETWEEN 1968 AND 1972*

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A project to study the effect of legislation and socioeconomic factors on intercaste attitudes in India was started in 1968. The findings of the first phase of the project were published earlier.¹ This paper is concerned with the comparison of the results of the follow-up study (conducted in 1972) with the earlier findings. It was hypothesized that a higher percentage of respondents in 1972 than those in 1968 would respond liberally. A multiple choice questionnaire containing 15 items from the 1968 questionnaire were administered to 371 (183 urban and 188 rural) males drawn in the same way and from the same three regions (Agra, Delhi, and Varanasi) of North India as our 1968 respondents. The respondents represented all the major caste groups and included 116 Harijans (former "untouchables").

When asked whether or not they subscribed to the view that the caste in which a person is born is determined by his actions in some previous existence (the theory of Karma), a significantly lower percentage of respondents in 1972 than in 1968 (40 against 49, $p < .01$) gave the liberal ("no") response. However, an overwhelming majority of the respondents, both in 1968 and 1972 (more than 80%) said that it is one's work rather than caste which determines one's status in present-day India. An equal proportion of respondents in 1968 and 1972 considered caste system "intolerable" (40%) and almost equal percentages (37 and 35) said that it should "be abolished." The proportion of the respondents giving liberal response on the question of intercaste marriage was the lowest in both 1968 (23%) and 1972 (22%).

The Indian Constitution provides for reservations of legislative seats, jobs, and educational facilities for the Scheduled Castes (lower castes and Harijans). A significant increase in liberalism was observed in this area. The percentages of respondents favoring the reservation of legislative seats and jobs increased from 52 and 54 in 1968 to 67 in 1972, and the per-

* Received in the Editorial Office, Provincetown, Massachusetts, on December 13, 1973. Copyright, 1975, by The Journal Press.

¹ Anant, S. *The Changing Concept of Caste in India*. Delhi: Vikas Publications, 1972.

tage favoring provision of special educational facilities increased from 77 in 1968 to 87 in 1972 (all differences being significant beyond .001 level).

Though some increase was found in the percentage of caste Hindus showing liberal attitudes toward physical contact with Harijans (from 66% to 73% N.S.), Harijan's contact with a food basket (from 56% to 64% $p < .05$), and sitting at the same table with a Harijan in a restaurant (from 49% to 58% $p < .001$), no change was found in their attitudes toward acceptance of food from Harijans or eating the food cooked or handled by them. The above results confirm our earlier hypothesis that caste Hindus tend to resolve the cognitive imbalance, caused by conflicting caste and legal rules, through the process of differentiation.² The major change in attitudes has occurred in those spheres which do not conflict with the traditional ideas of "ceremonial purity."

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² Anant, S. Theory of cognitive balancing and intercaste attitudes. *Indian J. Psychol.*, 1971, 46, 207-217.

ETHNOCENTRISM AMONG AMERICAN AND CHINESE YOUTH*¹

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Stereotypes among American youth seem to have changed greatly in the last few decades.² Although it is not certain that racial stereotyping has been fading, ethnocentrism does not seem as strong as it once was among American youth, who have even assigned more favorable terms to such other racial groups as English, German, or Japanese than to themselves as Americans.³ If ethnocentrism among Americans has indeed declined, it may be hypothesized that Americans should view any other racial group at least as favorably as they view themselves. Yet so far no research has shown that Americans would perceive a traditional object of racial prejudice, such as Chinese, more favorably than themselves. This study explored how American students stereotyped Chinese and themselves, and compared the findings with Chinese stereotypes of Americans and of themselves.

Questionnaires were administered simultaneously in English to 296 American students enrolled in introductory sociology at Ohio State University and in Chinese to 265 students in introductory behavioral science at two Taiwanese universities. The questionnaire, consisting of 33 adjectives to describe a national character, was partially adopted from the original Katz and Braly study.⁴ Responses were along a five-point scale, ranging from nonrepresentative to most representative. Each subject was instructed to rate independently the representativeness of each item to his own group and to the other group. The items were then organized according to their content as negative or positive. The negative items included

* Received in the Editorial Office, Provincetown, Massachusetts, on January 11, 1974. Copyright, 1975, by The Journal Press.

¹ The authors wish to express their appreciation to Prof. Elizabeth Han of Taiwan Normal University and Prof. James VanderZanden of Ohio State University for their assistance in data collection.

² Gilbert, G. M. Stereotype persistence and change among college students. *J. Abn. & Soc. Psychol.*, 1951, 46, 345-354.

³ Karlins, M., Coffman, T. L., & Walters, G. On the fading of social stereotypes. *J. Personal. & Soc. Psychol.*, 1969, 13, 1-16.

⁴ Katz, D., & Braly, K. Racial stereotypes of one hundred college students. *J. Abn. & Soc. Psychol.*, 1933, 28, 280-290.

such terms as selfish, deceitful, sly, etc., and the positive were intelligent, alert, efficient, etc. For each item a mean score was computed from each sample's perceptions of the two groups, and a t test was used to measure the significance of the differences between these mean scores.

Chinese youth evaluated their own group much more positively and much less negatively than did the American. Among Chinese students, the negative items (measured by mean scores) were seen as less representative of their own group than of the Americans; thus, the differences between the two sets of mean scores are mostly negative. Positive terms were seen as more representative of Chinese than of Americans, so that the differences between the two sets of mean scores are overwhelmingly positive. A t test shows that the differences for most of the items are statistically significant (at the 5 percent level).

The reverse is true for American students, who, contrary to the usual belief, not only showed more accurate perceptions of Chinese cultural traits, but were also less ethnocentric than their Chinese counterparts. Americans tended to view the negative items as more representative of Americans and the positive items as less so. Thus, American youth perceived the Chinese much more favorably than their own group, but a reciprocal pattern was not observed among Chinese college students in Taiwan.⁵

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⁵ The authors fully realize that a Chinese sample drawn from the mainland rather than from Taiwan may have given different results.

REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, 95, 279-280.

THE RELATIONSHIP BETWEEN BIRTH ORDER, SEX, AND LEADERSHIP IN A RELIGIOUS ORGANIZATION*

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The influence of birth order on a number of variables has been extensively investigated,^{1,2} and a number of reviews have appeared.^{3,4} However, few studies have investigated the relationship between birth order and leadership *per se*. Herrell⁵ has found support in a number of studies for the hypotheses that in the military firstborns are overrepresented among leaders, and tend to be more successful than later born individuals. Chemers,⁶ in investigating the relationship between birth order and leadership styles, found support for the hypothesis that firstborns tend to be more task-oriented leaders, and later borns tend to be more relationship and socially oriented leaders.

As part of a major project with a religious organization⁷ demographic data on birth order and leadership positions held were collected from 134 male and 161 female adult members of the congregation. An individual

* Received in the Editorial Office, Provincetown, Massachusetts, on November 2, 1973.

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¹ S. Schachter. *The Psychology of Affiliation*. Stanford, Calif.: Stanford Univ. Press, 1959.

² C. H. Miley. Birth order research 1963-1967: Bibliography and index. *J. Individ. Psychol.*, 1969, 35, 64-70.

³ J. R. Warren. Birth order and social behavior. *Psychol. Bull.*, 1966, 65, 38-49.

⁴ C. Schooler. Birth order effects: Not here, not now! *Psychol. Bull.*, 1972, 78, 161-175.

⁵ J. M. Herrell. Birth order and the military, a review from an Alderian perspective. *J. Soc. Individ. Psychol.*, 1972, 28, 38-44.

⁶ Chemers, M. M. The relationship between birth order and leadership style. *J. Soc. Psychol.*, 1970, 80, 243-244.

⁷ B. E. Sandler, R. C. Dorn, J. N. Farr, & F. A. Scalia. Fostering self-use of behavioral science techniques in a voluntary organization. In preparation.

was categorized as a leader if he or she had held the position of president, vice president, secretary, or treasurer of a group within the organization. Separate contingency tables (2×2 , firstborn or only child *vs.* later born; leader *vs.* nonleader) were constructed for the male and female samples.

The results for the male sample showed no significant relationship between birth order and leadership position. On the other hand, firstborn females were more likely than later borns to have served in a leadership role ($\chi^2 = 11.02$, $p < .001$). The observed percentages of firstborns *vs.* later borns who have served in these roles illustrate how powerful the birth order effect is for women. While 28% of the 72 firstborn women reported having served as president of one or more of the organizations, only 11% of the 81 later born females did so. Corresponding percentages for vice president are 42% *vs.* 21%; for secretary 42% *vs.* 14%; and for treasurer 21% *vs.* 9%.

Since the analyses were based on the total population of members of the religious organization, a counter hypothesis could be posed to explain the observed results: namely, that firstborns are more likely to be *members* of suborganizations and, for that reason, officers. While this hypothesis cannot be completely dismissed, the data which are available regarding membership in three of the more prominent suborganizations do not provide support for it. In no case was there a significant relationship between order of birth and membership.

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COMPETITION WITH ONESELF *VERSUS* OTHERS AS A FACILITATOR IN THE CLASSROOM*¹

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Competition is an important social motivator which has both positive and negative consequences. One long standing finding is that it can lead to improvements in quantity of performance,² but that it can harm quality.³ The findings in the literature are mixed, and there has been little effort to pit various forms of competition against each other on the same tasks.

The present study compared the effects of two kinds of competition, plus a noncompetition control condition on six classroom groups totaling 208 college students. Each competition or control condition was induced by instructions into two classes. Each class was given either a coding or an arithmetic task to obtain measures of (a) quantity of production, (b) quality, or errors in performance, and (c) anxiety experienced by the subjects.

One of the conditions, competition-with-others, required the students to do a task at their normal pace, and then have them determine the best performance in class by a show of hands. A second trial of the same task was then requested with the instruction to everyone to try to surpass the best quantity score of the class. The competition-with-self condition did not require a public announcement of scores on the first trial, and on the second trial the Ss were asked to do their best without regard to anyone else's performance. The control condition was treated as a simple test and retest for reliability purposes.

It was found, with an analysis of covariance, that competing with others and competing with one's self led to a greater quantity of work than did not competing at all ($p < .05$ for coding and $p < .001$ for arithmetic). The competition-with-others score was not significantly larger than

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¹ This paper is based on the senior author's M.S. thesis submitted to Colorado State University. A more comprehensive report is available from Jack Hautaluoma at the address given at the end of this article.

² Hurlock, E. G. The use of group rivalry as an incentive. *J. Abn. & Soc. Psychol.*, 1927, 22, 278-290.

³ Williams, J. Effects of competition between groups in a training situation. *Occup. Psychol.*, 1956, 30, 85-93.

competition-with-self. On the test for quality of performance, competition-with-others produced more errors than either the competition-with-self or the control conditions, which had an equal number of errors ($p < .01$). There were no differences in anxiety scores under any conditions.

In conclusion, if quality of production is important, and one wishes to use competition, it may be advantageous to schedule competition with a person's own best performance, rather than competition with others. If errors are not an important consideration in a situation, both competition conditions appear to lead to more performance than a noncompetitive condition.

A word of caution is in order, because most of the findings concerning competition and cooperation, including this study, were done with American college students. Generalization to other populations may not be warranted until cross-cultural studies have been performed.

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THE INFLUENCE OF EXPERIMENTER PRIOR CONTACT ON COLLEGE STUDENT PERFORMANCE*

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Rosenthal has suggested that experimenter acquaintanceship or experimenter prior contact has a significant influence on subject responding.¹ Rosenkrantz and Van De Riet have found that prior contact interacts with the type of reward and a type of task to influence child performance.² Their study suggests that in no reward conditions prior contact increases performance, in social reward conditions it frequently decreases performance, while in material reward conditions it usually has no effect. In addition it suggests that prior contact appears to have a more favorable effect on complex tasks and a less favorable to a negative influence on simple tasks. There have been few similar studies of the effect of prior contact on older subjects. In one of these studies, Simkins, using college students, found that prior contact resulted in no change in the effectiveness of a material reward.³

With this review of the literature regarding prior contact the following hypotheses were suggested: (a) In the no reward condition, prior contact should increase performance as compared with no prior contact. The length of prior contact used should have no effect on material rewards. (b) Prior contact should have a facilitating influence on the performance of the more difficult task.

The subjects were 32 undergraduate psychology students at the University of Florida. Sixteen were male, and 16 were female. Four undergraduate students were chosen to act as experimenter assistants. They were all naive with regard to the purposes and the hypotheses of the study. Sixteen of the subjects had prior contact with the experimenter assistants.

* Received in the Editorial Office, Provincetown, Massachusetts, on November 21, 1973. Copyright, 1975, by The Journal Press.

¹ Rosenthal, R. *Experimenter Effects in Behavioral Research*. New York: Appleton-Century-Crofts, 1966.

² Rosenkrantz, A. L., & Van De Riet, V. D. The influence of familiar and unfamiliar experimenters on child performance. *J. Genet. Psychol.*, 1972, 121, 235-243.

³ Simkins, L. Effects of examiner attitudes and type of reinforcement on the conditioning of hostile verbs. *J. Personal.*, 1961, 29, 380-395.

Half of the subjects who received prior contact received a small cash payment as reward, and half of the subjects who did not receive prior contact received the reward.

The results indicate there was a significant interaction between prior contact and the reward conditions. *Post hoc* comparisons revealed that in the no reward condition prior contact increased performance, while it had no statistically significant effect on the cash payment. There was not a significant interaction between prior contact and the type of task. The cell means of interaction, however, suggested that prior contact had some positive influence on a "more difficult" task and a more equivocal influence on a "less difficult" task.

This study suggests that prior contact alone is not a significant determiner of college student performance, but rather interacts significantly with the type of reward provided. There was not a statistically significant difference in rate of responding for levels of the task variable, suggesting that the two tasks were not differentially influencing responding during the test period. This may have been the basis for not obtaining a significant prior contact-task interaction. Another possible interpretation relies on the proposed mechanism for the influence of prior contact. Rosenkrantz and Van De Riet² proposed a dual mechanism underlying the effects of prior contact. This dual mechanism is based on the incentive value of the prior contact and its capacity for the reduction of anxiety. It may be that young adults are not as significantly influenced and made anxious by psychological experimentation that has little direct effect on their well being. This apparently is not the case with young children who appear to be more easily influenced by adult experimenter behavior.⁴

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⁴ Rosenkrantz, A. L., & Van De Riet, V. D. The influence of prior contact between child subjects and adult experiments on subsequent child performance. *J. Genet. Psychol.*, 1974, 124, 79-90.

SCULPTURE PREFERENCES, CRAFTSMANSHIP, AND AESTHETIC SENSITIVITY*

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When confronted with modern or abstract art, gallery visitors often remark, "That doesn't look very hard to do" or "Even I could do that." This attention to the technical skill required to produce an art work reached a peak during the Renaissance when technical virtuosity was a major criterion of aesthetic excellence. Ratings of the amount of technical skill required to make different sculptures are hypothesized to correlate positively with ratings of liking for these sculptures. The strength of association between an individual S's ratings of skill required and liking for the various sculptures is hypothesized to correlate negatively with aesthetic sensitivity, frequency of visits to art galleries, and education in art. Aesthetic sensitivity has been correlated positively with experience in art galleries and education in art.^{1,2} Thus, aesthetic sensitivity, as measured by the Meier Art Judgment Test (MAJT), is expected to correlate positively with art experience and education.

Thirty-six slides of Western sculpture (28 modern and eight traditional) were selected from a set of 80 slides known to vary considerably in mean popularity.³ Each of the 36 slides was rated (seven-point scales) for "technical skill required" and "liking" by 37 male and 25 female introductory psychology students.

Across the 36 sculptures mean ratings of skill required correlated (.86 ($p < .05$) with mean ratings of liking. For individual slides the correlations between ratings of skill required and liking ranged from .15 to .65 with a median value of .45 (32 of the 36 correlations were significant at the .05 level). For individual Ss the correlations between ratings of skill required and liking ranged from .14 to .92 with a median value of .63. These

* Received in the Editorial Office, Provincetown, Massachusetts, on December 12, 1973. Copyright, 1975, by The Journal Press.

¹ Child, I. Observations on the meaning of some measures of esthetic sensitivity. *J. of Psychol.*, 1964, 57, 49-64.

² Child, I. Personality correlates of esthetic judgment in college students. *J. Personal.*, 1965, 33, 476-511.

³ Moffett, L. A., & Dreger, R. M. Sculpture preferences and personality traits. *J. Personal. Assess.*, 1974, in press.

squared (to obtain an interval scale) correlations were not significantly correlated with MAJT scores, frequency of visits to art galleries, or number of college courses in art. Finally, MAJT scores were not significantly correlated with experience in art galleries, education in art, or cumulative grade point average. For a variety of sculptures the estimated technical skill required to make the pieces was closely associated with liking for the sculptures, thus supporting the historical association between craftsmanship and aesthetic value.

Contrary to expectations, the extent to which estimates of skill required and ratings of liking were associated for an individual *S* was not related to aesthetic sensitivity, experience in art galleries, or education in art. Also, aesthetic sensitivity was not related to either experience in art galleries or education in art. However, this lack of significant relationships may have been due to the highly restricted variance in the variables of art experience and education. Furthermore, the sample *Ss* were generally not very educated in art, experienced in art, or aesthetically sensitive.

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PRIOR INFORMATION, CREDIBILITY, AND ATTITUDE CHANGE*

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Lewan and Stotland¹ found that introduction of prior neutral information tended to reduce attitude change against a little-known country, but Touhey and Veach² have reported a significant reversal of this finding in a recent replication failure. However, Touhey and Veach found that attitude change was directly related to the favorability of their subjects' pretest attitudes, while Lewan and Stotland found no relationship between initial attitude and change, a difference that might be explained in terms of communicator credibility.³ Thus the present study orthogonally varied prior information and communicator credibility in order to clarify the original findings and the replication failure.

Subjects were 100 undergraduates randomly assigned to one of four treatment combinations. Two groups receiving the Prior Information treatment read an encyclopedia excerpt that described the country of Andorra in a nonevaluative context. The two groups assigned to the No Prior Information treatments received similar information describing an unrelated country. Following the information manipulation, the credibility of the communicator was varied in terms of her qualifications to speak about Andorra. One Prior Information and one No Prior Information group heard a negative emotion arousing appeal, delivered by "a former member of the Peace Corps," that was designed to present an unfavorable opinion of Andorra. The two remaining groups heard the same appeal delivered by a speaker who was introduced as a housewife who had recently read a romantic novel about Andorra.

A 2×2 analysis of variance (Information \times Credibility) showed a

* Received in the Editorial Office, Provincetown, Massachusetts, on December 13, 1973.

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¹ Lewan, P. C., & Stotland, E. The effects of prior information on susceptibility to an emotional appeal. *J. Abn. & Soc. Psychol.*, 1961, 62, 450-453.

² Touhey, J. C., & Veach, T. L. Prior information and attitude change: A replication failure. *J. Soc. Psychol.*, 1972, 88, 309-310.

³ Aronson, E., Turner, J. A., & Carlsmith, J. M. Communicator credibility and communication discrepancy as determinants of opinion change. *J. Abn. & Soc. Psychol.*, 1963, 67, 31-36.

significant main effect for credibility ($F = 4.36$, $df = 1/96$, $p < .05$) in the direction of more change for the more credible speaker. There was no significant main effect for information. However, the interaction ($F = 8.14$, $df = 1/96$, $p < .005$) was highly significant and fell in the expected direction: prior information increased attitude change against Andorra for the more credible communicator, but prior information decreased change against Andorra in response to the less credible speaker. For the credible communicator, subjects with initially favorable attitudes showed significantly more change ($p < .02$), but there was a nonsignificant trend in the opposite direction for the less credible communicators. Although differences in communicator credibility appear to account for the discrepant findings of the studies by Lewan and Stotland and Touhey and Veach, it should be emphasized that differences in interactions between the two studies suggested the present analysis. In view of other recent failures to replicate several basic findings of experimental social psychology, systematic examination of differences between interactions may suggest similar resolutions of conflicting findings.

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AFFECTIVE RESPONSE TO ABILITY GROUP EXPERIENCE IN HIGH SCHOOL*

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STEPHEN WOLK AND RICHARD SOLOMON

The practice of grouping students homogeneously via performance on some standardized achievement test or intelligence test remains a most pervasive American educational practice. Research has been directed to ascertain the effectiveness of such grouping in regard to both cognitive and affective outcomes. Particularly for the affective area (such as self-concept, level of aspiration, satisfaction, etc.) a relative paucity of definite research findings exist. Esposito¹ notes a tendency for homogeneous grouping to inflate the self-esteem of children assigned to high ability groups and reduce the self-esteem of children in average and low ability groups.

To assess the effects of group placement upon affective behavior, the Brown-Holtzman Survey of Study Habits and Attitudes was administered to a sample of high school students. Only the subscales of Teacher Attitudes (TA) and Educational Attitudes (EA) were utilized, which measure the degree to which the student is satisfied with school. To insure that an S's responses would not be influenced by either the presence of a teacher or the inhibition to evaluate negatively any element of the school, each S responded to the instrument anonymously.

Ss consisted of 370 high school students from a large suburban high school (males = 200; females = 170) obtained by a random sample of all freshmen and senior sections and representing 30% of the total available sections. The following cross-sectional classification procedures were used: (a) only Ss of the highest and lowest ability track levels (of a four level system) were utilized (factor of high-low track placement); (b) only Ss who were freshmen or seniors were tested (factor of time spent at a track level);²

* Received in the Editorial Office, Provincetown, Massachusetts, on December 26, 1973.

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¹ Esposito, D. Homogeneous and heterogeneous ability grouping: Principal findings and implications for evaluating and designing more effective educational environments. *Rev. Educ. Res.*, 1973, 43, 163-179.

² Since seniors could have moved vertically through the track levels during their years in school, only Ss who had been in the two levels examined for the past two years were included in the final sample. At the time of testing, freshman Ss had been in the tracking system for one-half year.

(c) since the sample tested was nearly entirely white (approximately 98%) the possible confounding effects of race (in which certain racial classifications would predominate grouping levels) were strongly controlled.

Two analyses of variance (Sex \times Grade \times Track Level) were performed upon the dependent variables. The results indicated similar patterns for both TA and EA variables, main effects for Sex, and Track Level ($p < .001$), and an interaction effect for Track Level \times Grade ($p < .001$). Results indicate that (a) females, regardless of track placement, were more satisfied with school procedures than males; (b) lower track Ss, as compared to higher track Ss, could be characterized generally, regardless of time spent in track, as less satisfied with a majority of educational policies that affect their lives; (c) most importantly, Ss in the lower track became less satisfied with these policies and procedures as the time spent in this track increased, whereas the higher track Ss' satisfaction increased slightly with time.

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CURRENT PROBLEMS AND RESOLUTIONS

Under this heading appear summaries of data which, in 500 words or less, would increase our comprehension of socially compelling problems, hopefully move us somewhat closer to a solution, and clearly show promise of transcending their own origin in the Zeitgeist; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, 95, 291-292.

RACIAL PREJUDICE AND WORD SYMBOLISM*

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JOHN E. JORDAN AND MARTIN C. BRODWIN

Symbolism illustrates how the color "black" has been associated with negative connotations, while "white" has been associated with positive characteristics.

Racial overtones associated with the words and concepts used for blacks and other nonwhites were evident in the language of the very earliest settlers of the United States. This special language was used first to define lower status for nonwhites and later to justify the status that had been assigned to them.

The semantic differential technique has been used to study color symbolism and race. The research has supported the observation that, in American culture, "black" is generally associated with "badness" while "white" symbolizes "goodness."

Williams, in a discussion of the changing image¹ of the black American, stresses the importance of terminology in the images that are associated with blacks. By modifying a noun with the adjective "Black," one may set it apart from the dominant group.

The methodology for the present study was based on Jordan's² extension

* Received in the Editorial Office, Provincetown, Massachusetts, on December 22, 1973. Copyright, 1975, by The Journal Press.

¹ Williams, R. L. The changing image of the black American: A sociopsychological appraisal. In C. Thomas (Ed.), *Boys No More: A Black Psychologist's View of Community*. Beverly Hills, Calif.; Glencoe Press, 1972. Pp. 66-79.

² Jordan, J. E. Attitude-behavior research on physical-mental-social disability and racial-ethnic differences. *Psychol. Aspects Disabil.*, 1971, 18, 5-26.

of Guttman's three-facet four-level theory into a five-facet six-level design, maintaining the original simplex structure. In developing³ the Attitude-Behavior Scales (ABS), Jordan modified the structural theory of Guttman by including theoretical and behavioral explanations of human action. The *Attitude Behavior Scales* have been applied to numerous "minority" or disadvantaged groups cross-culturally.

Two different attitude instruments were used in this study: the Attitude Behavior Scale, and a 20-item semantic differential scale. Jordan's five-facet, six-level ABS, constructed according to principles of Guttman's facet theory and measuring attitudes on an abstract-impersonal to concrete-behavioral continuum, was used to assess the "attitude-behaviors" of white college students toward "Black" and "Negro" persons. The results indicate no differences between the "Black" scale or the "Negro" scale; i.e., the two referent terms were viewed equally. The simplex structure was obtained for both scale versions.

The major differences between the ABS and the semantic differential can be found both in the actual design of the scales and in the concept of attitude used in the scales. The ABS is more concerned with the behavioral dynamics of attitude; it views attitude and behavior as one concept, hence the term, "attitude-behavior."

The ABS also differs from the semantic differential in that the ABS asks the subject to evaluate the attitude-object in specific situations that he may have encountered in interacting with the particular attitude-object in question. This involves evaluation of the attitude-object in a situation, while the semantic differential involves evaluation of an attitude-object in a more global or undefined space.

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³ Hamersma, R. J., Paige, J., & Jordan, J. E. Construction of a Guttman facet designed cross-cultural attitude-behavior scale toward racial-ethnic interaction. *Educ. & Psychol. Meas.*, 1973, 33(3), 565-576.

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ABBREVIATIONS OF WORDS USED IN THE TITLES OF JOURNALS

(One-word titles are never abbreviated. The word "the" is not used, nor its equivalent in any other language. The word "of" or its equivalent in other languages is used only to discriminate what would otherwise be identical titles in different languages. The word "and" is always used, but indicated by "&" in the Roman alphabet. Only English words are indicated here, but the corresponding words in other languages should receive a corresponding abbreviation. All abbreviations and all one-word titles should be in italics.)

Abnormal	<i>Abn.</i>	Japanese	<i>Jap.</i>
Abstracts	<i>Abst.</i>	Journal	<i>J.</i>
American	<i>Amer.</i>	Mathematical	<i>Math.</i>
Anatomy	<i>Anat.</i>	Measurement	<i>Meas.</i>
Animal	<i>Anim.</i>	Medical	<i>Med.</i>
Applied	<i>Appl.</i>	Mental	<i>Ment.</i>
Archives	<i>Arch.</i>	Monographs	<i>Monog.</i>
Association	<i>Assoc.</i>	Neurology	<i>Neurol.</i>
Attitude	<i>Attit.</i>	Opinion	<i>Opin.</i>
Australian	<i>Aust.</i>	Orthopsychiatry	<i>Orthopsychiat.</i>
Behavior	<i>Behav.</i>	Personality	<i>Personal.</i>
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Bulletin	<i>Bull.</i>	Philosophy	<i>Philos.</i>
Bureau	<i>Bur.</i>	Physics	<i>Phys.</i>
Canadian	<i>Can.</i>	Physiology	<i>Physiol.</i>
Character	<i>Charac.</i>	Proceedings	<i>Proc.</i>
Children	<i>Child.</i>	Psychiatry	<i>Psychiat.</i>
Chinese	<i>Chin.</i>	Psychoanalysis	<i>Psychoanal.</i>
Clinical	<i>Clin.</i>	Psychology	<i>Psychol.</i>
College	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
Comparative	<i>Comp.</i>	Quarterly	<i>Quart.</i>
Consulting	<i>Consult.</i>	Religious	<i>Relig.</i>
Contributions	<i>Contrib.</i>	Research	<i>Res.</i>
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Experimental	<i>Exper.</i>	Science	<i>Sci.</i>
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1. The proper sequence for the parts of your submitted manuscript is as follows: (a) text (b) references, (c) footnotes, (d) tables, (e) figures, and (f) figure legends. However, monographs start with a table of contents and may have an acknowledgment page before the text and an appendix immediately after the text.
2. Use heavy typewriter paper, $8\frac{1}{2} \times 11$ inches, double-space all lines, and leave margins for editorial work. Do not use onionskin, odd sizes, and abrasive or wax finishes.
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5. Do not begin a sentence with a numeral.
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9. Enclose a submission letter, with a statement that the manuscript is not under consideration elsewhere. If you are unknown to the Editors, kindly give your credentials.

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1. Performance tests for children of pre-school age—R. STUTSMAN
2. An experimental study of the eidetic type—H. KLÜVER
- 3 & 4. A study of natio-racial mental differences—N. D. M. HIRSCH
5. A psychological study of juvenile delinquency by group methods—J. W. BRIDGES AND K. M. B. BRIDGES
6. The influence of puberty praecox upon mental growth—A. GESELL

VOLUME 2—1927

- 1 & 2. The mind of a gorilla—R. M. YERKES
3. The role of eye-muscles and mouth-muscles in the expression of the emotions—K. DUNLAP
4. Family similarities in mental-test abilities—R. R. WILLOUGHBY
5. Coordination in the locomotion of infants—L. H. BURNSIDE
6. The mind of a gorilla: Part II. Mental development—R. M. YERKES

VOLUME 3—January-June, 1928

1. An experimental study of the olfactory sensitivity of the white rat—J. R. LIGGETT
2. A photographic study of eye movements in reading formulae—M. A. TINKER
3. An experimental study of the East Kentucky mountaineers—N. D. M. HIRSCH
4. Responses of foetal guinea pigs prematurely delivered—G. T. AVERY
5. Objective differentiation between three groups in education (teachers, research workers, and administrators)—M. B. JENSEN
6. The effect of segregation on the sex behavior of the white rat as measured by the obstruction method—M. JENKINS

VOLUME 4—July-December, 1928

1. Observation and training of fundamental habits in young children—E. A. BOTT, W. E. BLATZ, N. CHANT, AND H. BOTT
- 2 & 3. Determination of a content of the course in literature of a suitable difficulty for junior and senior high school students—M. C. BURCH
- 4 & 5. Methods for diagnosis and treatment of cases of reading disability—M. MONROE
6. The relative effectiveness of lecture and individual reading as methods of college teaching—E. B. GREENE

VOLUME 5—January-June, 1929

1. The age factor in animal learning: I. Rats in the problem box and the maze—C. P. STONE
2. The effect of delayed incentive on the hunger drive in the white rat—E. L. HAMILTON
3. Which hand is the eye of the blind?—J. M. SMITH
4. The effect of attitude on free word association-time—A. G. EKDAHL
5. The localization of tactual space: A study of average and constant errors under different types of localization—L. E. COLE
6. The effects of gonadectomy, vasotomy, and injections of placental and orchic extracts on the sex behavior of the white rat—H. W. NISSEN

VOLUME 6—July-December, 1929

1. Learning and growth in identical infant twins: An experimental study by the method of co-twin control—A. GESELL AND H. THOMPSON
2. The age factor in animal learning: II. Rats on a multiple light discrimination box and a difficult maze—C. P. STONE
3. The acquisition and interference of motor habits in young children—E. MCGINNIS
4. A vocational and socio-educational survey of graduates and non-graduates of small high schools of New England—A. D. MUELLER
- 5 & 6. A study of the smiling and laughing of infants in the first year of life—R. W. WASHBURN

VOLUME 7—January-June, 1930

1. Tensions and emotional factors in reaction—E. DUFFY
2. Teacher influence on class achievement: A study of the relationship of estimated teaching ability to pupil achievement in reading and arithmetic—H. R. TAYLOR
- 3 & 4. A study of the effect of inverted retinal stimulation upon spatially coordinated behavior—P. H. EWERT
5. A study of the mental development of children with lesion in the central nervous system—E. E. LORD
6. An experimental study upon three hundred school children over a six-year period—N. D. M. HIRSCH

VOLUME 8—July-December, 1930

1. The amount and nature of activities of newborn infants under constant external stimulating conditions during the first ten days of life—O. C. IRWIN
2. Race and social differences in performance tests—S. D. PORTEUS, *et al.*
3. Language and growth: The relative efficacy of early and deferred vocabulary training, studied by the method of co-twin control—L. C. STRAYER
4. Eye-movements and optic nystagmus in early infancy—J. M. MCGINNIS
- 5 & 6. Reactions of kindergarten, first-, and second-grade children to constructive play materials—L. FARWELL

VOLUME 9—January-June, 1931

- 1 & 2. The status of the first-born with special reference to intelligence—H. H. HSIAO
- 3 & 4. An experimental study of bright, average, and dull children at the four-year mental level—H. P. DAVIDSON
5. An historical, critical, and experimental study of the Seashore-Kwalwasser test battery—P. R. FARNSWORTH
6. A comparison of difficulty and improvement in the learning of bright and dull children in reproducing a descriptive selection—F. T. WILSON

VOLUME 10—July-December, 1931

1. A comparative study of a group of southern white and negro infants—M. B. MCGRAW
- 2 & 3. An experimental study of prehension in infants by means of systematic cinema records—H. M. HALVERSON
4. The limits of learning ability in kittens—A. M. SHUEY
- 5 & 6. The effect of habit interference upon performance in maze learning—O. W. ALM

VOLUME 11—January-June, 1932

1. General factors in transfer of training in the white rat—T. A. JACKSON
2. The effect of color on visual apprehension and perception—M. A. TINKER
3. The reliability and validity of maze experiments with white rats—R. LEEPER
4. A critical study of two lists of best books for children—F. K. SHUTTLEWORTH
- 5 & 6. Measuring human energy cost in industry: A general guide to the literature—R. M. PAGE

VOLUME 12—July-December, 1932

1. Family resemblances in verbal and numerical abilities—H. D. CARTER
2. The development of fine prehension in infancy—B. M. CASTNER
- 3 & 4. The growth of adaptive behavior in infants: An experimental study at seven age levels—H. M. RICHARDSON
- 5 & 6. Differential reactions to taste and temperature stimuli in newborn infants—K. JENSEN

VOLUME 13—January-June, 1933

1. A critique of sublimation in males: A study of forty superior single men—W. S. TAYLOR
2. A study of the nature, measurement, and determination of hand preference—H. L. KOCH, *et al.*
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Genetic Psychology Monographs (continued)

VOLUME 14—July-December, 1933

1. Mental growth during the first three years: A developmental study of sixty-one children by repeated tests—N. BAYLEY
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5. The limits of learning ability in rhesus monkeys—H. A. FJELD

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1. A statistical study of ratings on the California Behavior Inventory for Nursery-School Children—H. S. CONRAD
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VOLUME 17—January-December, 1935

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5. 6. Studies in aggressiveness—L. BENDER, S. KEISER, AND P. SCHILDER

VOLUME 19—January-December, 1937

1. Psychological bases of self-mutilation—C. DABROWSKI
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VOLUME 20—January-December, 1938

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2. Some light on the problem of bilingualism as found from a study of the progress in mastery of English among pre-school children of non-American ancestry in Hawaii—M. E. SMITH
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4. The capacity of the rhesus and cebus monkey and the gibbon to acquire differential response to complex visual stimuli—W. E. GALT
5. The social-sex development of children—E. H. CAMPBELL

VOLUME 22—January-December, 1940

1. Measuring human relations: An introduction to the study of the interaction of individuals—E. D. CHAPPEL
2. Aggressive behavior in young children and children's attitudes toward aggression—M. D. FITE
3. Student attitudes toward religion—E. NELSON
4. The prediction of the outcome-on-furlough of dementia praecox patients—J. S. JACOB
5. Significant characteristics of preschool children as located in the Conrad inventory—K. H. READ
6. Learning by children at noon-meal in a nursery school: Ten "good" eaters and ten "poor" eaters—J. B. MCCAY, E. B. WAKING, AND P. J. KRUSE

VOLUME 23—January-June, 1941

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ETHNIC STEREOTYPES: THE ROLE OF LANGUAGE*¹

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SUMMARY

An investigation was conducted to determine whether the language of testing exerts an influence in cross-cultural work among bilingual Ss concerning ethnic stereotypes and the generality of stereotyping. The investigation constituted a replication in the Tagalog language of a study initially conducted in English. The results indicated that the language of testing did not appreciably affect the product of stereotyping, the stereotypes themselves, but it did affect at least one aspect of the process of stereotyping, its generality across ingroup and outgroup concepts. Such results suggest that investigators engaged in cross-cultural research should consider very carefully the language of testing.

A. INTRODUCTION

One problem facing the social scientist conducting cross-cultural research is that of the language to be employed in the investigation. In many countries, a sufficient number of people often speak English as a second language to tempt the English speaking investigator to conduct his testing in English. It seems possible, however, that such a research strategy could have unforeseen implications. Results based on such research could conceivably be due to the effects of the weaker (second) language rather than to other psychological mechanisms postulated by the experimenter.

One area of social psychology in which considerable research has been conducted in other cultures is that concerned with ethnic stereotypes—i.e., consensual beliefs that one group has about other groups (1). The language employed in such research, however, often has been English (see for example, 5, 6, 8, 9).

* Received in the Editorial Office, Provincetown, Massachusetts, on June 27, 1974, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1975, by The Journal Press.

¹ This research was supported in part by the Canada Council for research on the project, Bicultural Communication: The Significance of Stereotypes; and was conducted while the senior author was a Ford Foundation Consultant at the Philippine Normal College, Manila.

Another investigation (2) using English as the language of testing was conducted in the Philippines employing Tagalog subjects. In this research, one group of subjects rated the concepts, Americans, Canadians, Chinese, Filipinos, Germans, Japanese, Jews, Russians, and Spaniards along 45 stereotype differential scales, while a second group used the Katz and Braly (3) adjective selection procedure to characterize the same ethnic groups. The stereotypes obtained with the two procedures were highly similar, especially for ethnic group concepts for which consensus was substantial. In the same study, individual difference measures were computed, from responses on the stereotype differential, to determine whether subjects tended to adopt the consensually defined stereotype about each ethnic group presented. The correlations among these scores suggested that the tendency to stereotype outgroups (i.e., non Filipinos) was a generalized phenomenon independent of the tendency to stereotype the ingroup. That is, subjects who adopted the consensually defined stereotype about one outgroup did so about all outgroups, but this tendency was independent of their willingness to adopt the consensually defined stereotype about their national group, Filipinos.

The results of that study led to the present investigation. It seems possible that somewhat different stereotypes might have been obtained if the Tagalog language had been employed. This possibility is strengthened by data obtained in another investigation (7) which suggested that when Tagalog subjects rated ethnic group concepts in Tagalog, as opposed to English, their responses tended to be more evaluative: outgroups were rated less favorably and ingroups more favorably in Tagalog than in English. That study, however, was concerned mostly with regional groups rather than international ones; hence it is not clear whether the pattern would emerge with stereotypes about international groups.

The purpose of the present investigation was to replicate the Gardner *et al.* study (2) but by using Tagalog rather than English as the language of testing. This replication allows for a comparison of the stereotypes obtained from two different samples using a common methodology but different languages. It also permits a comparison of one aspect of the process of stereotyping: viz., the generality phenomenon which was demonstrated in the original study (2).

B. METHOD

1. Subjects

Subjects (Ss) for this study were 88 undergraduate and graduate education students at the Philippine Normal College, Manila, Republic of the

Philippines. All of the Ss identified themselves as Tagalogs, a major language group in the Philippines.

2. Materials

Ss were presented with a questionnaire which included nine ethnic group labels, Americans, Canadians, Chinese, Filipinos, Germans, Japanese, Jews, Russians, and Spaniards, each of which was followed by 45 stereotype differential scales. The ethnic group labels, the scales and the instructions employed in the original study (2) were presented in Tagalog, the native language of the Ss. To ensure that translated equivalents were used, this translated form was retranslated into English by a second translator who had not seen the original questionnaire. Where differences existed, the two individuals were consulted to decide on the best Tagalog equivalent of the original scale.²

The order of presentation of the ethnic group concepts and the order and direction of the stereotype differential scales were randomly varied.

3. Procedure

Ss were tested in groups within their classrooms. Testing time required approximately one hour. It should be noted that this testing was done at the same time as that of the original study (2), though the Ss were different.

C. RESULTS AND DISCUSSION

The stereotypes about each ethnic concept are defined in terms of those 10 attributes for which agreement or consensus is greatest. Such consensus is indexed through the stereotype differential ratings by means of the t statistic, $N(\bar{x}-\mu)/S$, which measures the extent to which ratings on any particular scale are polarized towards one of the end points. Where the mean (\bar{x}) departs significantly from a neutral rating (μ) of 4, it can be concluded that Ss perceive that attribute as being associated with the group in question. Rather, however, than focusing on all attributes for which the ratings are significantly polarized, emphasis is placed only on the 10 attributes with the greatest polarization assuming such polarization is significant.

It would seem superfluous to present or discuss the content of the stereotypes derived in the present research.³ What is important is the degree of similarity between the stereotypes obtained in this study and those presented

² Copies of the Tagalog words used in the stereotype differential scales, as well as their translated equivalents, are available from the senior investigator.

³ The English translations of the 10 words contained in the stereotypes of each group are available from the senior investigator.

in the original investigation (2). For four of the ethnic groups, five of the attributes were common, and in five instances, six were common to the stereotypes obtained in the original study. Also, the "general images" of the stereotypes in each language are highly similar, regardless of the specific attributes included in the stereotype. Such agreement suggests that in terms of the product of the stereotype assessment task, the language of testing does not have a considerable influence.

A more precise index of the degree of similarity of the ratings made in Tagalog and the ratings made in English is provided by the correlation between the t values, for each ethnic group concept, of the scales in each language. Correlations between these t values were .88, .83, .82, .88, .86, .79, .74, .86, and .86 ($p < .01$ in each case) for the ethnic group concepts Americans, Canadians, Chinese, Filipinos, Germans, Japanese, Jews, Russians, and Spaniards respectively. These results demonstrate, at the group level, a considerable degree of similarity between the responses made in Tagalog and those made in English, indicating that the language of testing does not appreciably influence the relative polarity of the attributes for each ethnic group.

Although, when rating ethnic group concepts in each of two languages, Ss might agree upon those attributes which are deemed most characteristic of the groups concerned, and similarly correlations of t values for each ethnic group concept across the languages employed might be highly significant, it is quite possible that the relative consensus involved in trait attribution toward the concepts may vary as a function of the language of testing. That is, it is possible that in one language the relative consensus in the stereotypes of the groups may be different from that in the other language. In order to test this possibility, the absolute t values associated with the 10 attributes in the stereotype about each concept were summed in each language, and the ethnic group concepts were ranked in terms of this consensus. A Spearman rank order correlation of .75 ($p < .05$) was obtained between the orders of the concepts in the two languages suggesting that the relative degree of consensus involved in the traits stereotypically assigned to the groups in the two languages was comparable.

Individual difference measures of the tendency for Ss to adopt the consensually defined stereotype about each ethnic group concept were derived in a manner analogous to that employed in the original investigation (2). This procedure involves the addition, for each S , of his responses on the 10 scales which were used in the definition of the stereotype of each ethnic group. Since the scales are reflected where necessary, individual difference scores

TABLE 1
CORRELATIONS OF STEREOTYPING SCORES IN ENGLISH (UPPER DIAGONAL) AND TAGALOG (LOWER DIAGONAL)

Concept	Americans	Canadians	Chinese	Filipinos	Germans	Japanese	Jews	Russians	Spaniards
Americans									
Canadians	.46	.34	.24	.19	.46	.38	.20	.36	.48
Chinese	.58	.44	.26	.01	.51	.39	.50	.24	.44
Filipinos	.53	.36	.31	.15	.39	.14	.37	.14	.26
Germans	.49	.38	.36		.03	-.02	-.01	.34	.21
Japanese	.63	.47	.58	.37	.50	.46	.50	.36	.41
Jews	.27	.35	.30	.30	.38	.35	.36	.29	.38
Russians	.63	.39	.43	.37	.41	.53	.24	.18	.30
Spaniards	.46	.35	.40	.46	.56	.49	.27	.41	.19

Note: In the upper diagonal all correlations greater than .20 are significant at the .05 level; correlations greater than .25 are significant at the .01 level. In the lower diagonal, the corresponding values of the correlation coefficient are .22 ($p < .05$ and .28 ($p < .01$).

of the tendency to adopt the consensually defined stereotype about any particular ethnic group may take values from 10 to 70, with a high score reflecting a tendency on the part of the individual to perceive the ethnic group in a manner which conforms to the stereotype. Table 1 presents the correlations among the individual difference measures obtained in the Gardner *et al.* (2) study (upper diagonal) and those obtained in the present investigation (lower diagonal).

The correlations obtained in the present investigation tend to be higher than the correlations obtained in the previous one. An examination of Table 1 reveals that of the 36 correlations computed upon the data from each sample, 27 of the correlations from the present data (Tagalog language) are higher than the corresponding correlations (English language) obtained by Gardner *et al.* (2). Furthermore all correlations in the matrix of the present study are significant ($p < .05$). These findings suggest that Ss were more consistent in their reactions to the ethnic group concepts on a stereotyping dimension: Ss who tended to adopt the stereotype of one group tended to adopt it of all, while Ss who did not subscribe to the stereotype of one group tended not to stereotype all groups. In the original study a similar pattern emerged among the outgroup labels though it was not so pronounced. Furthermore, in the original study, the tendency to stereotype ingroups was generally independent of the tendency to stereotype outgroups, while in the present investigation the generality of stereotyping encompasses both ingroups and outgroups. Since the stereotypes in both investigations are highly similar, it seems reasonable to conclude that this difference in the generality of stereotyping is due to the difference in the language of testing.

The present investigation does not provide any means for determining the reasons for the differences in the generality of stereotyping. Data obtained in a study by Kirby and Gardner (4), however, support the conclusion that the present results are more typical, and the use of English in the previous investigation resulted in irregular results. In the Kirby and Gardner study (4), Canadian students were tested in English, and results indicated that the generality of stereotyping encompassed both ingroups and outgroups. Thus, it seems reasonable to conclude from that study and the present one that stereotyping is a generalized phenomenon including both ingroup and outgroup labels.

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THE DETERMINATION OF AESTHETIC JUDGMENT BY RACE AND SEX*

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SUMMARY

A comparison is made between the aesthetic judgment of 131 designs and devices, made by some 200 English students of both sexes and that made by some 200 Japanese students of both sexes. Factor analyses were carried out on the ratings and similar factors discovered in the two racial groups. It is concluded that formal determinants of aesthetic judgments of designs of the kind used here are similar or even identical for these two samples in spite of the great cultural and racial differences between them.

A. INTRODUCTION

Of the many determinants of aesthetic judgment, race (including in this term all the cultural factors which may distinguish one racial group from another) and sex have often been discussed, but there is relatively little empirical research to enable one to estimate their importance. Eysenck (2) has postulated the existence of a general factor "T" ("good taste") which enters all aesthetic judgments to a varying degree, and which shows marked individual differences: this factor is conceived as having a firm genetic basis and to extend beyond the confines of a particular racial or national group. At the simple level of color preferences Eysenck (3) has shown that there are considerable similarities between various nations and races, and at the level of preferences for polygonal figures (13) and for simple designs (8, 10) it has also been found that marked similarities exist in the judgment made by European, Egyptian, and Japanese subjects. The present paper represents an extension of this work.

B. THE EXPERIMENT

The subjects of the study comprised 72 English male and 107 female university students and 130 Japanese male and 76 female university students,

* Received in the Editorial Office, Provincetown, Massachusetts, on July 1, 1974, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1975, by The Journal Press.

tested in their respective countries. Their mean age was 20 years approximately. The stimuli used were designs and devices, 131 in all, selected from Hornung's book (9) out of a total of 1836 such figures. The designs chosen were photographed, made into slides, and presented to small groups for judgment. Subjects were instructed to rate each slide on a five-point scale: Don't like = 1; Like a little bit = 2; Like = 3; Like a lot = 4; Like very much indeed = 5. Slides were projected at an easy rate, allowing roughly 10 to 15 seconds for each slide, but not continuing until all subjects had made their ratings. The English and Japanese subjects were of roughly equal age and intellectual standing and had little experience of each other's culture. None was a trained artist.

C. RESULTS

The means and *SDs* of the judgments are as follows: for English and Japanese males, $2.56 \pm .52$ and $2.65 \pm .31$; for females, $2.59 \pm .59$ and $2.42 \pm .34$. Analysis of variance showed that Japanese and English subjects did not differ significantly in their mean liking for the 131 slides, but males and females showed a slight difference ($p < .05$), with the males showing a very slightly greater liking than the females. However, this difference is due entirely to the Japanese group; for the English group there is a very slight difference in the opposite direction. In view of the inhomogeneity of variances, and the low level of significance, this finding cannot be taken too seriously. The race \times sex interaction is highly significant ($p < .01$), although the actual size of the differences in question is not large. It will be noted that the *SDs* of the English group are much larger than those of the Japanese group; this difference is fully significant statistically ($p < .001$) and indicates that the Japanese do not use extreme judgments to anything like the same extent as do the English. Similar findings have been reported by Iwawaki and Cowen (11) and Iwawaki, Okuno, and Cowen (12).

The correlations between the ratings for our four groups are all highly significant and show very similar principles of judgment are active in males and females, Japanese and English. (The actual correlations are as follows: English males *vs.* females, $r = .83$; English males *vs.* Japanese males, $r = .61$; English males *vs.* Japanese females, $r = .54$; English females *vs.* Japanese males, $r = .64$; English females *vs.* Japanese females, $r = .65$; Japanese males *vs.* females, $r = .74$). We can form groups which are homogeneous for sex, but not for race, and average their correlations via the inverse hyperbolic tangent transform; this works out at $r = .62$. Doing the same for groups

homogeneous for race, but not for sex, gives us $r = .78$. Last, groups heterogeneous for both sex and race give us $r = .58$. Translating these correlations into percentage of overlapping elements (r^2) we obtain values of 38%, 61%, and 34%. In other words, whether groups are homogeneous or heterogeneous for sex is not very important (38% *vs.* 34% of overlapping elements); however, to change from homogeneity to heterogeneity with respect to race is important (61% *vs.* 34% of overlapping elements). To put it in a slightly simplified manner, differences in race are seven times as important as differences in sex in determining aesthetic judgments of the kind employed in this study. Nevertheless, the point remains that even when two groups are heterogeneous with respect to both sex and race, they show highly significant correlations of the order of approximately .6; this would seem to support Eysenck's original hypothesis.

The 15 best-liked and the 15 least-liked designs were extracted from the Japanese ratings and are reproduced as Figures 1 and 2. They may be compared with Figures 10 and 11 in Eysenck (6), which represent the best- and least-liked designs for the English sample. There is a considerable overlap; none of the designs liked by the Japanese was disliked by the English, and none of the designs disliked by the Japanese was liked by the English. The findings may be used to test the two major quantitative hypotheses proposed for an "aesthetic formula." Birkhoff (1) suggests the formula $M = O/C$; i.e., the aesthetic pleasure derived from a visual percept (M) is a direct function of its order elements (symmetry, right angles, equal sides, etc.) and an inverse function of its complexity (number of sides, number of re-entrant angles, etc.). Eysenck (4) suggested that the formula $M = O \times C$ would represent experimental results better, as well as being in better agreement with aesthetic theory. No exact test can be made of these two formulations as far as our two figures are concerned, but it will be clear from simple inspection that the better-liked designs are much more complex, thus giving a direct, and not an inverse relationship between M and C as required by Eysenck's formula. This is in good agreement with results obtained with other types of stimuli on previous occasions.

D. FACTOR ANALYSIS

Eysenck (6) has also published the results of a factor analysis of the ratings made by the English sample; nine major factors were extracted and interpreted on the basis of the designs having high loadings on each factor. The same procedure was gone through with the correlations obtained between



FIGURE 1
BEST-LIKED DESIGNS, JAPANESE SAMPLE

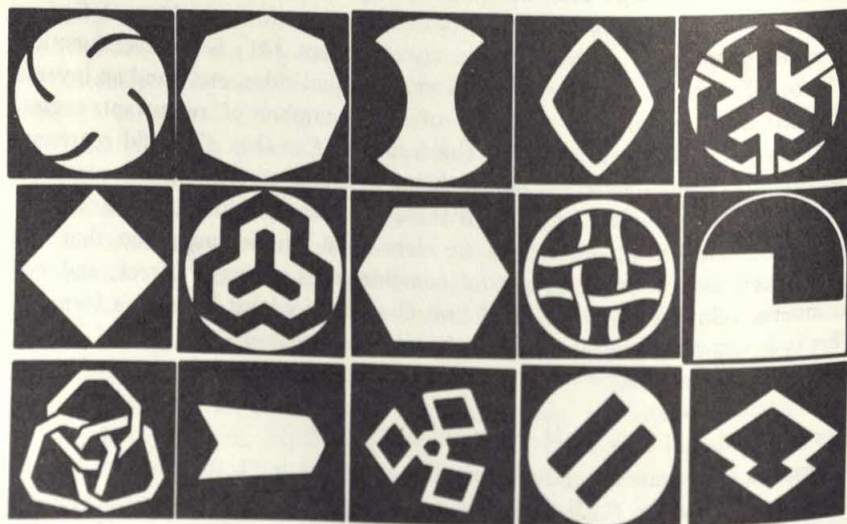


FIGURE 2
LEAST-LIKED DESIGNS, JAPANESE SAMPLE

designs for the Japanese sample, and the major interpretable factors will now be presented and compared with those obtained from the English sample. The five designs having highest loadings on each factor will be shown in successive figures; these may be compared with similar figures for the English sample given by Eysenck (6).

Figure 3 shows a set of patterns which was previously called "rectangular variant"; the English and the Japanese factors are clearly very similar, four out of five designs with the highest loadings being identical. The term used to designate the factor is self-explanatory and, like the others used later on, is only meant to be descriptive; the nature of the factor has to be guessed at by inspection of all the high-loading designs, but it would clearly have been impossible to reprint them all. Consequently, only the five highest loading designs are given in each case. Even when a design is present in the English and absent in the Japanese set of five, this does not necessarily mean that there is any discrepancy; the absent design might still have a high loading on the factor, but might just have escaped being in the highest five. This, in fact, is the usual finding in the sets discussed below and in the present one.

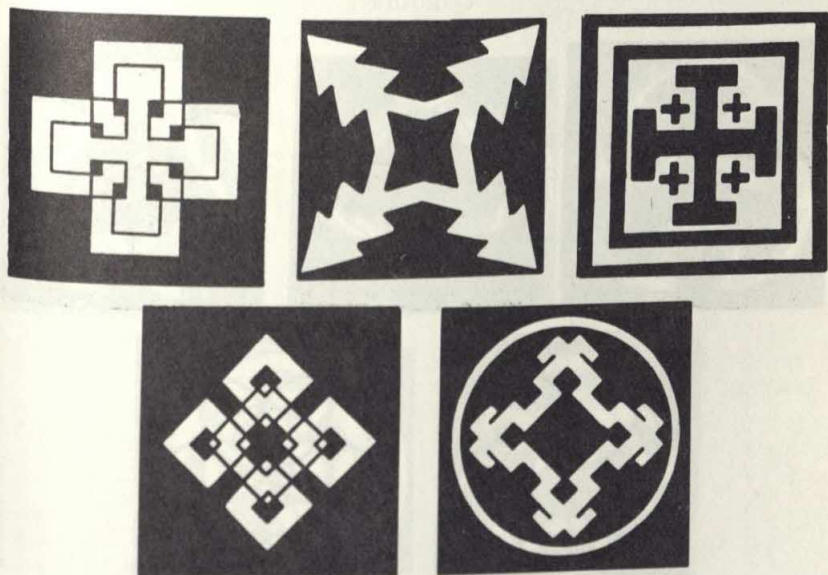


FIGURE 3
RECTANGULAR VARIANT

Figure 4 shows designs which bear similarities to three of the English sample factors; these were called "circular variant," "ring variant," and "curved variant" [English sample, Figures 2, 3, and 5; see Eysenck (6)]. It was difficult in the original study to identify these three factors separately, and they seemed to overlap considerably; the names chosen to characterize them indicate this similarity. It would not be possible to say that the Japanese factor was any closer to one than to the others of the English sample factors. No obvious explanation suggests itself for this divergence between the two factor analytic solutions.

Figure 5 represents the "star variant" of the English sample; although only two designs actually appear in both sets of five, items with high loadings overlap extensively in the two groups. The interpretation is one of the clearest of all the factors.

Figure 6 represents the "interlacement variant" of the earlier analysis; only one design is actually identical for the two groups, but again there is large-scale overlap between high-loading items in the two groups. The identification of the factor is again very clear-cut.

Figure 7 shows the "shading variant" of the earlier analysis. Four out of

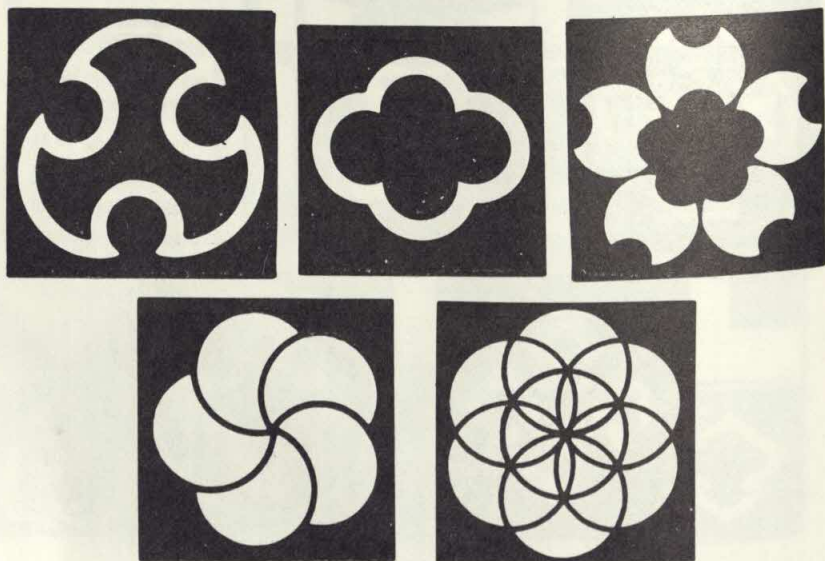


FIGURE 4
CIRCULAR VARIANT

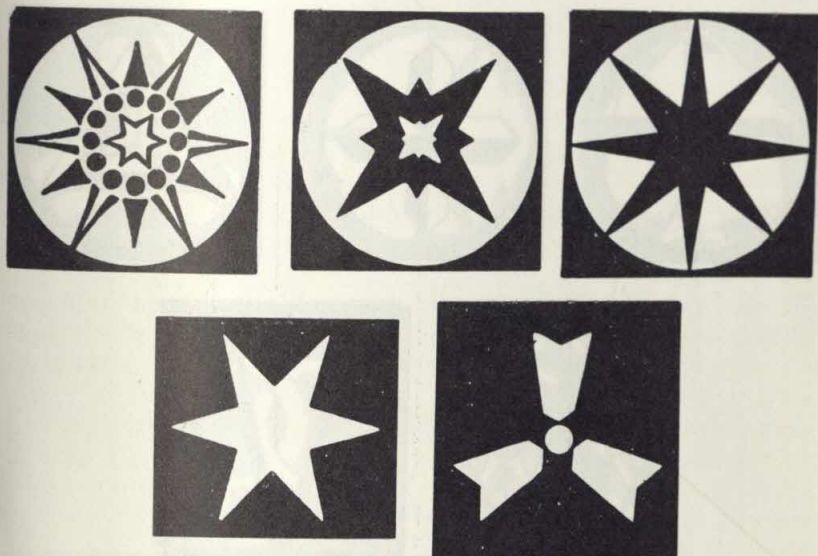


FIGURE 5
STAR VARIANT

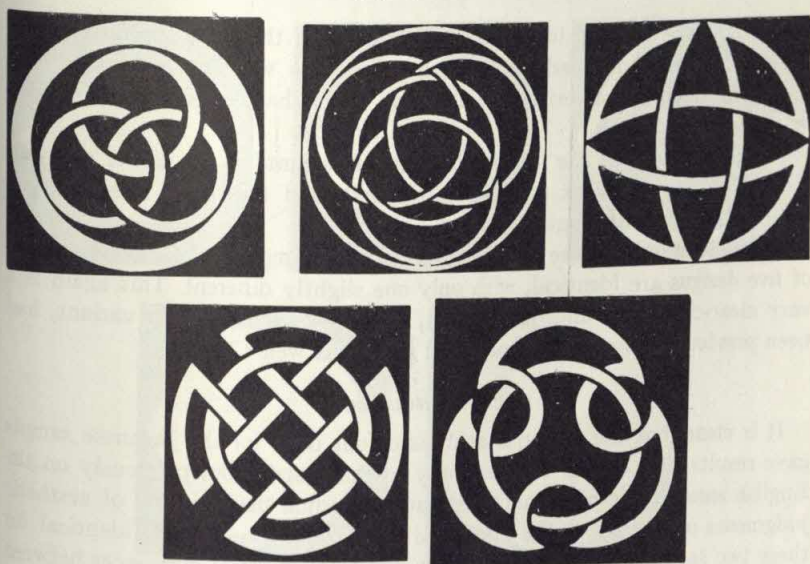


FIGURE 6
INTERLACEMENT VARIANT

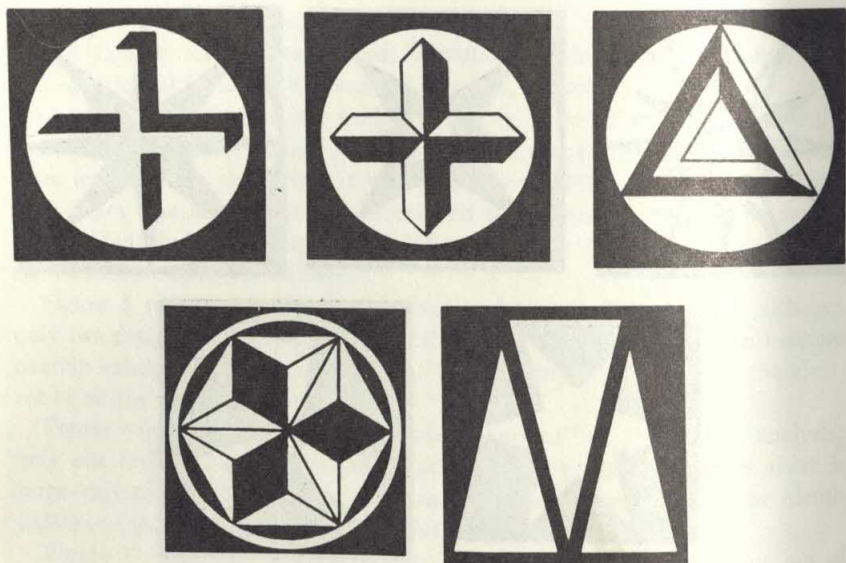


FIGURE 7
SHADING VARIANT

five designs are actually identical in this case, and the identification is fairly clear-cut. The term "shading" is perhaps not too well chosen to designate the effect which characterizes the drawings, but it has been difficult to find a better one.

Figure 8 represents the "three-dimensional variant" of the earlier analysis. Two of the five designs actually correspond, and the others are all characterized by high loadings.

Figure 9 represents the previous "order" or "simplicity" factor. Four out of five designs are identical, with only one slightly different. This again is a very clear-cut factor and, in addition, one which, like the star variant, had been previously observed in polygonal figures as well (7).

E. CONCLUSION

It is clear that the factorial analysis of our data for the Japanese sample gave results very similar in every way to that carried out previously on the English sample. We may conclude that the formal determinants of aesthetic judgments of designs of the kind used here are similar or even identical for these two samples in spite of the great cultural and racial differences between them. It is of course impossible to say at this stage to which of these two

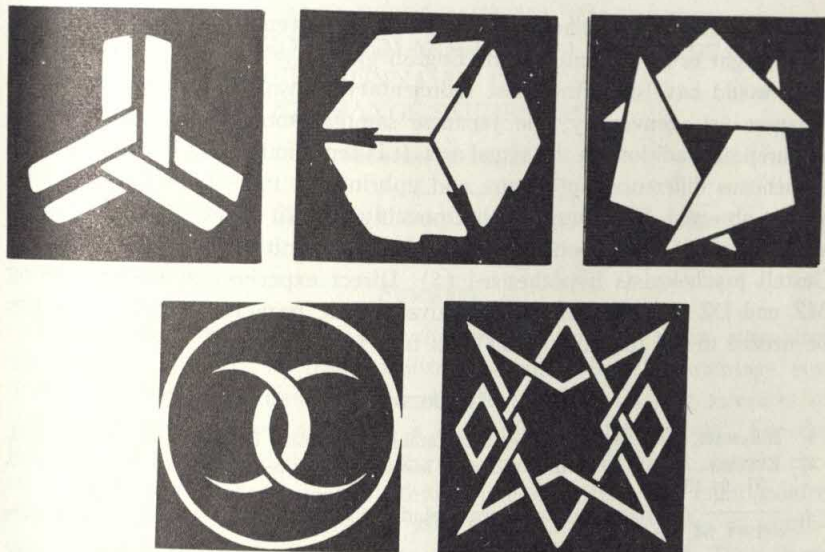


FIGURE 8
THREE-DIMENSIONAL VARIANT

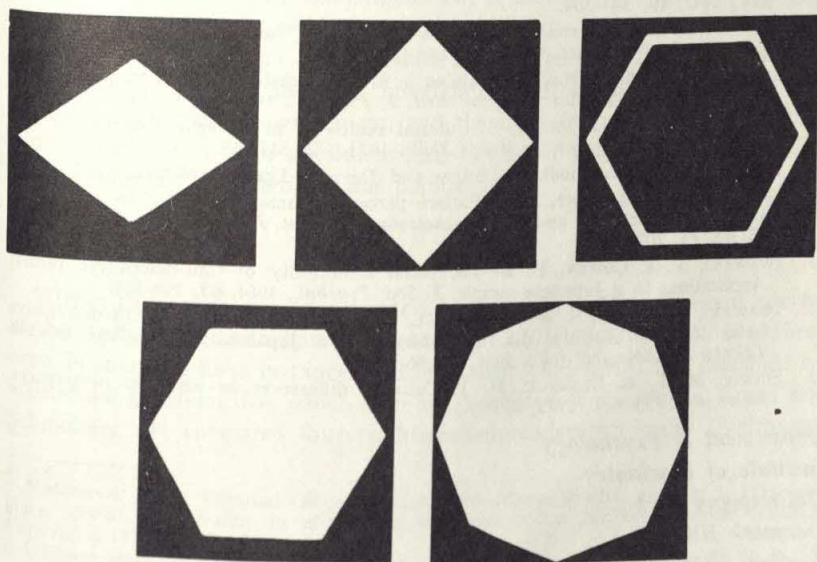


FIGURE 9
ORDER OR SIMPLICITY VARIANT

great interacting factors any of the observed differences in preference judgments ought to be attributed. The English groups taking part in the experiment would have only the most rudimentary knowledge, if any at all, of Japanese art; conversely, the Japanese sample would be largely ignorant of European traditions in the visual arts. It is remarkable that in spite of these tremendous differences in culture and upbringing, marked similarities were in fact observed. This suggests that possibly certain genetic factors may lie at the basis of the "good gestalt" and its recognition, very much as the Gestalt psychologists hypothesized (5). Direct experimental evidence using MZ and DZ twins, or some alternative genetic paradigm, would of course be needed to put this hypothesis on a firm footing.

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CONVERGENT AND DISCRIMINANT VALIDATION OF
A TRADITIONALISM-MODERNISM ATTITUDE
QUESTIONNAIRE FOR THAI
EXCHANGE STUDENTS*¹

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SUMMARY

To examine the convergent and discriminant validity of an attitudinal questionnaire measure of traditionalism-modernism in Thai exchange students, questionnaire scores were correlated with self and peer measures of traditionalism-modernism and with a measure of "culture-shock." For the latter, it was anticipated that high scores on modernism would inversely correlate with culture-shock scores. Results indicated that the questionnaire measures were positively correlated with self and peer measures at significant levels; however, the relationship was not very substantial. Thus, there appears to be only a tenuous degree of convergent validity for questionnaire measures of traditionalism-modernism. The results further indicate a marginal amount of discriminant validity as measured by the relationship between the traditionalism-modernism questionnaire and the culture-shock questionnaire. Caution was suggested in using unvalidated attitudinal questionnaire measures of traditionalism-modernism, and the need for recognizing the multi-dimensional rather than unidimensional nature of traditionalism-modernism as a personality characteristic was pointed out.

A. INTRODUCTION

Within the last decade, investigators have manifested an increased interest in the study of traditionalism-modernism (2, 7, 9, 11, 12, 16, 19, 20). However, in many of these instances, traditionalism-modernism was examined by attitudinal questionnaires which were not validated. For example, Armer and Schnaiberg (1) compared four traditionalism-modernism scales (Smith and

* Received in the Editorial Office, Provincetown, Massachusetts, on July 2, 1974, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1975, by The Journal Press.

¹ Please send requests for reprints to the second author, at the address shown at the end of this article.

Inkeles, Kahl, Schnaiberg, and Armer) and found them to be moderately equivalent, internally consistent, and reliable; however, they also found the questionnaires to be low in discriminant validity. They (1, p. 301) concluded that their findings "call into serious question the meaningfulness of the construct and/or measurement of modernity."

Campbell and Fiske (3) suggested that for a measure to be meaningful, it should have both convergent and discriminant validity. Convergent validity involves confirmation of a trait by independent measurement procedures, and discriminant validity involves a low or negative correlation of a trait with another trait with which it should differ. The purpose of the present study was to investigate the convergent and divergent validity of an attitudinal questionnaire measure of traditionalism-modernism in Thai exchange students.

To examine the convergent validity of the attitudinal traditionalism-modernism questionnaire, scores were correlated with self and peer measures of traditionalism-modernism. To investigate the discriminant validity of the questionnaire, scores were correlated with those from a "culture-shock" questionnaire. As strangers in a strange land, international exchange students frequently experience culture-shock, a psychological and behavioral condition characterized by anxiety, depression, and other adjustment difficulties (10, 15, 17, 18). Research has suggested that culture-shock is a function of several variables including situational stresses, demographic characteristics, and personality traits (6, 13, 15, 17). However, no study has yet examined the relationship between culture-shock and traditionalism-modernism. Nevertheless, there is ample reason to believe that culture-shock should be inversely related to modernism; exchange students who are modern should experience less culture-shock than those who are more traditionally oriented. Support for this supposition would be of interest in itself and would provide evidence for the discriminant validity of attitudinal questionnaire measures of traditionalism-modernism.

B. METHOD

1. *Subjects*

Ss were 38 students from Thailand enrolled in the University of Hawaii. Ss consisted of 18 males and 20 females; mean ages of the groups were 28.9 and 26.6 years, respectively. Ss average length of sojourn in Hawaii was one year and nine months. The Ss were selected from a larger pool of Thai students (59 students) enrolled at the university on the basis of their close

familiarity with one another. The 38 Ss were all ranked as known very well or known well by one another.

2. Materials

a. *Familiarity Scale*. This scale consisted of the names of all Thai students (59 students) studying at the University of Hawaii, during the Fall Semester of 1971. Each name was followed by a four-point scale (know very well, know well, know somewhat, do not know) with definitions of each category provided.

b. *Peer Traditionalism-Modernism Scale*. This scale consisted of the names of 38 Thai students who were selected on the basis of their close familiarity with one another. Next to each name, Ss were asked to rate the person as traditional or modern according to a description of each of the categories provided by the investigators.

c. *Self Traditionalism-Modernism Scale*. This scale was similar to the Peer Scale; however, the Ss were required to rate themselves as traditional or modern.

d. *Thai Traditionalism-Modernism Attitude Questionnaire*. This questionnaire consisted of 52 attitudinal items derived in direct or modified form from the following scales: Traditional Family Ideology (TFI) Scale (14), OM-6 Modernity Scale (19), Traditional Western (T-W) Scale (7), Modernism I and II (12), the Filipino Traditional and Modern Attitudes Scale (11), and the Chinese Traditional-Modern (T-M) Scale (8). All items were presented in a four-point Likert-format scale: agree very much, agree a little, disagree a little, disagree very much. Responses on the scale were converted into scores as follows: For "modern attitude items," a response of agree very much was given a score of 4; agree a little, 3; disagree a little, 2; disagree very much, 1. On the other hand, for "traditional attitude items," the scoring was reversed. Of the 52 items, a positive endorsement on 22 was regarded as modern, while a positive endorsement on the remaining 30 was regarded as traditional. The total scores could fall between 52 and 208 points with the higher score reflecting modernism, and the lower score traditionalism. Details of the questionnaire are described elsewhere (4). The questionnaire items were selected on the basis of their relevance to Thai culture and behavior; all the basic modernity dimensions were covered, including activism, low stratification of life chance, low integration with relatives, low occupational primacy, individualism, trust, family modernism status of the male and female, high risk taking, mass-media participations, preference for urban life, openness to

new experience—places and people, health concepts, educational and occupational aspirations, and political activism.

e. *Culture-shock Questionnaire*. This questionnaire (5) consisted of 56 items; 36 items were derived from Shattuck's questionnaire (18) and 20 items were generated by the investigators. The items were scored according to several different scales as a function of item suitability.

3. Procedures

On the basis of the results of the Familiarity Scale, 38 Ss were selected for participation in the final study. Each of the Ss selected was required to know the others "very well" or "well" according to the description that these categories entailed. Ss were then administered the Peer and Self Traditionalism-modernism Scales and asked to rank one another and themselves as either traditional or modern according to the criteria provided. Then Ss were administered the Thai Traditionalism-Modernism Attitude Questionnaire. The results from each of the measures were then correlated with one another and tested for significance.

C. RESULTS

The self-ratings of traditionalism-modernism and the peer-ratings of Traditionalism-modernism correlated the highest ($r_t = .68$); the Thai Traditionalism-Modernism Attitude Questionnaire correlated .39 with the peer-ratings of traditionalism-modernism and .38 with self-ratings of traditionalism-modernism. The self-rating/peer-rating correlation was significantly greater than the other two at the .05 level, but all three correlations were found to be significantly different from zero at the .05 level.

Both the self-ratings and the peer-ratings of Traditionalism-modernism correlated inversely with the Culture Shock Questionnaire ($-.34$ for self-rating and $-.35$ for peer-rating). The largest inverse correlation was between the Thai Traditionalism-Modernism Attitude Questionnaire and the Culture Shock Questionnaire ($-.39$). All three correlations were significantly different from zero at the .05 level, but did not differ from one another. The results supported the expectation that culture-shock increases as the level of a student's modernity decreases.

D. DISCUSSION

The present results indicate that the Thai Traditionalism-Modernism Attitude Questionnaire is related to self and peer measures of the same dimension.

sion among Thai exchange students. This suggests that attitudinal questionnaire measures do possess some convergent validity. However, the correlations are only marginally significant especially when contrasted with the high correlation found between self and peer measures of traditionalism-modernism. Attitudinal questionnaire measures of traditionalism-modernism which are not substantially validated against independent criteria, therefore, should be used cautiously. Of course, the present results are restricted to the current population and may not necessarily be supported with other groups.

The results of the culture-shock questionnaire provide an alternative approach for assessing the discriminant validity of the Thai traditionalism-modernism questionnaire. It was anticipated that subjects scoring high on modernism should evidence low culture-shock scores and vice-versa. The results supported the expectations, whether traditionalism-modernism was measured by self, peer, or questionnaire measures; however, the relationship found was only marginally significant in all three instances. This suggests that there is at least a limited basis for the discriminant validity of the questionnaire in contrast to the findings of Armer and Schnaiberg (1).

The rather marginal discriminant validity of traditionalism-modernism questionnaire may be accounted for by the likelihood that other factors beyond traditionalism-modernism may determine the extent of culture-shock. For example, it is possible that culture-shock is a function of specific situational variables (e.g., living conditions, health problems, food difficulties, poor interpersonal relations) or background factors (e.g., education, socioeconomic level, language fluency) which transcend traditionalism-modernism trait orientations. Moreover, it is possible that exchange students might find that modernistic orientations, such as competitive behavior, opinion expression, sex-role equivalence, and so forth, can be restricted to classroom behavior but not to other aspects of life so that they can maintain traditionalistic attitudes and behaviors outside class without necessarily experiencing culture-shock.

It is important to recognize that traditionalism-modernism may not be a general trait but rather may be specific to various areas or aspects of functioning. Individuals may hold modern beliefs in some areas (e.g., male-female status, political activism, mass-media participation) but traditional beliefs in others (e.g., health concepts, occupational aspirations, and trust). Future research should examine more closely dispersion of traditionalism-modernism attitudes rather than accepting a total score as some reflection of the individual's traditionalism-modernism. Such an effort could probably increase both the convergent and discriminant validity of attitudinal measures.

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RUMOR MONGERING IN WAR TIME*¹

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SUMMARY

The study tests the hypothesis that the essentials of rumor are importance and ambiguity: that is, the amount of rumor in circulation varies with the importance of the subject times the ambiguity of the evidence. The study also test the transmission theory of rumor and the classificatory method devised by Robert H. Knapp. The frequencies of the rumors that circulated in U.S.A. in 1942 and in Biafra from 1968-1970 are also compared. The results strongly confirmed the hypothesis, except that a new class of rumor, named "neo-pipe-dream rumor," was discovered among the rumors that circulated in Biafra. In each country it is found that there is a negative correlation between pipe-dream rumors and wedge-driving rumors.

A. INTRODUCTION

Even though the folklore and literature of many cultural groups contain warnings against apocryphal tales, it is only recently that this type of tale has become the object of systematic inquiry. These inquiries have been made by people in different disciplines: jurists and historians whose profession is very much concerned with the authenticity of testimony, psychologists studying accuracy of perception and recall, and sociologists involved in the study of public opinion, collective problem-solving, and reactions to disasters. These studies rest upon the popular concept of rumor (4). During World War II, Knapp (3), after collecting several rumors that were circulating in the U.S.A. in 1942, classified rumor into three main categories: namely, pipe-dream rumors, fear or bogey rumors, and wedge-driving rumors. During the recent Nigerian Civil war (1967-1970), the immediate cause of which was the secession of the eastern part of the country, and which became known as Biafra, the writer collected both during the civil war and some months after

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the end of the war a total of 121 rumors.² These rumors were processed and analyzed to determine how they could fit into the classificatory system devised by Robert H. Knapp. Knapp necessarily studied only the rumors that he collected in U.S.A.; consequently his classification was restricted to the rumors that he collected there, even though other nations who were allies of the United States had their own types of rumors during the same war.

G. W. Allport and Leo Postman (2) theorized after their study of rumor-mongering that, as a rumor is transmitted from person to person, there is the tendency on the part of the rumor mongers to distort what they have heard. They identified in the distortions three interrelated tendencies: leveling, sharpening, and assimilation.

A second hypothesis advanced by Allport and Postman (2) was that rumors concerning a given subject matter will circulate within a group in proportion to the importance and the ambiguity of the subject matter in the lives of individual members of the group. The implication of this hypothesis is that no matter how ambiguous the subject matter of a rumor may be, such a rumor will not circulate if it is not important to the subjects. Also the rumor will not circulate when the subject matter is important to the subjects if at the same time they possess a clear understanding of the whole situation confronting them. The rumors that were collected as aforementioned were used to test these hypotheses.

B. METHOD

The rumors were collected by two methods. The first method was the holding of discussions concerning the progress of the civil war with Biafran villagers, and with former Biafran urbanites who because of constant air raids by the Nigerian Air Force had evacuated the cities to take shelter in the rural villages. The rural Biafran villages where most of the rumors were collected were Abiriba, Ohafia, Ozu-Abam, Item, and Oguta.

When I used to go to the village square about 6 p.m., the time of the day when people felt safe enough from air raid attacks to gather in a group to discuss the latest news of the war, I would join the group and participate in the discussions. (Because some rural villages like Ututu and Abiriba had been raided by the Nigerian Air Force bombers, villagers were afraid to form any large gathering between 11 a.m. and 5 p.m., especially on sunny days.) I would narrate what I had heard lately about the war, and this speaking out

² For a complete list of the rumors that circulated in Biafra during the war, order NAPS Document No. 02385 from Microfiche Publications, 305 East 46 Street, New York, New York 10017; remit \$1.50 for microfiche or \$5.00 for photocopies.

often had the effect of making other people narrate what they had heard, too. Under this situation, the Biafrans, because of my good knowledge of the English language, regarded me as a patriot whose interest was to keep them up to date with the news of the war. They knew I could read newspapers published in English and could listen to foreign radio broadcasts like the Voice of America and the British Broadcasting Corporation, and consequently they believed that I was in a good position to obtain the most "accurate news" of the war. The situation offered me a good opportunity to gather data for a research work, and most of the rumors were collected by this first method. At one gathering at the Abiriba village square, I told a group of villagers that I had heard that a round-table conference would soon be held between General Ojukwu, the Biafran leader, and General Gowon, the head of the Nigerian Federal Government to discuss the possibility of a cease fire. One person in the gathering immediately said that he had heard that the conference had already been held and that the United Nations had ordered both General Ojukwu and General Gowon to order their respective armies to lay down their arms. I knew that this person's information was a rumor because at that time U Thant, then Secretary General of the United Nations, had already made an official statement concerning the Nigerian-Biafran conflict: he regarded it a domestic problem and not an international one. The U.N. could hardly give an order on an issue that is outside its area of authority. This method of collection was started in April 1968 and lasted until the end of the war in January 1970.

The second method involved university undergraduates. In the fall quarter of 1970, after the end of the war, 125 undergraduates of both the Nsukka and the Enugu campuses of the University of Nigeria, who were taking a course in introductory sociology and who had spent the civil war years in Biafra, were asked to write term papers with the title, "Rumors that I Heard During the Civil War." Subjects were unaware of my research intention, but they were told that the term papers would count for five percent of the final grade in the course. This inducement made them put maximum effort into collecting as many rumors as possible.

C. RESULTS

From these two sets of rumors a total of 121 rumors were finally extracted. Several appeared in both sets. There were also some in both sets that were different versions of the same rumor. One example of this is the rumor that President Lyndon Johnson had convinced both Nigeria and Biafra to stop fighting, and the rumor that two United States senators, specially sent by

the American government, had convinced both General Gowon and General Ojukwu to call off the war.

One of the important differences between these two sets of rumors is that those collected during the war tended to contain more details of the subject matter of the rumor, while most of those that were collected from the students' term papers had already undergone the processes of leveling, sharpening, and assimilation. For example even though all the students wrote of the "death" of General Gowon, only 8% of them gave the details concerning the cause of death as would appear later in this article. Another major difference is that rumors from the term papers contained more versions of the same rumors than the ones collected during the war. This could be explained by the fact that the students came from different parts of Biafra, while my movements, because of war conditions, were restricted to few villages. Different versions of the same rumor are more likely to occur in diverse places than within a restricted locality.

1. *The Pipe Dream Rumors*

Out of the 121 rumors, 76 were of the pipe-dream type, and these formed 63 percent of the total number. Knapp (3) defined pipe-dream rumors as the rumors that express the wishes and hopes of the people among whom they circulate. Two examples are as follows: (a) General Gowon has died in Kaduna. (b) An 80-year-old Russian woman, a mercenary in the Nigerian army, has been captured by the Biafran soldiers at Nkalagu near Enugu. She said that she is a veteran of the two World Wars and that her capture by the Biafran soldiers is a proof that Biafra will win the war.

2. *Fear or Bogey Rumors*

There were only 15 bogey rumors out of the 121 rumors that were collected, 12 percent of the total. Knapp (3) defined bogey rumors as those rumors that result from fears and anxieties of those among whom they circulate. Some examples follow: (a) General Gowon had ordered all the members of the Nigerian armed forces to shoot every moving object that they see in Biafra. (b) Several Biafran women who became pregnant by being sexually intimate with Hausa soldiers (fighters in the Nigerian Army) gave birth to reptiles. (c) A new type of V.D. called "Bonny Special" has been introduced into Biafra by the Nigerian soldiers; it cannot be cured.

3. *Wedge-Driving Rumors*

The wedge-driving rumors were defined by Knapp (3) as those rumors that bring about disunity among groups and consequently destroy loyalties. There

were 22 of these or 18 percent of the total: for example, (a) Some top Biafran army officers are communicating secretly with top officials of the Nigerian government and are passing Biafran military secrets to them. (b) All the able bodied young men from the city of Onitsha have declared that they will not join the Biafran army. They said that their ancestors were of non-Ibo origin. Nearly 90 percent of Biafrans were Ibo speaking people. On account of this rumor, after the fall of the city of Onitsha to the Nigerian forces, many people of Onitsha origin were insulted and humiliated at several refugee camps in Biafra. And because of these insults and humiliations many of them were known to have crossed over to the Nigerian side through bush paths.

4. *Neo-Pipe-Dream Rumor*

A fourth class of rumor circulated in Biafra, but it could not fit into Knapp's classificatory system. This class of rumors can be called neo-pipe-dream rumors. There were only seven of these, 6 percent of the total. Their peculiar nature which distinguishes them from the other classes of rumors is that each of them contains a pipe-dream rumor and a bogey rumor fused together. In each case, the pipe-dream section of the rumor neutralizes the bogey section. In this form, the rumor mongers were relieved of the fear and the anxiety which they would have had if the bogey rumor had been left unblended with the pipe-dream rumor. In some cases, the rumors made the subjects believe that both their enemies and the friends of their enemies were losing their lives and property in the process of executing the war. Some examples are as follows: (a) Ten battalions of well armed white mercenaries, who were former employees of the Shell British Petroleum Company together with Nigerian soldiers, tried to reach Port Harcourt (a seaport in Biafra) from the Mid-Western State of Nigeria through a huge oil pipe line to reinforce the Nigerian forces there. But they were, while still in the pipes, gassed to death by poisonous gas that was manufactured by Biafran scientists. (b) A Russian cargo boat that was bringing bombs and guns from Russia to Nigeria collided with a British passenger boat in the Atlantic Ocean. There was a mighty explosion, and the two boats sank within two seconds after the explosion. Not even a single life was saved.

5. *Unclassified Rumors*

Only one rumor could not be classified in any of the four classes above, and it was about looted property: (a) Church property which was looted in Biafra was being sold by auction in Kaduna, the capital city of Northern Nigeria.

6. *Rumor Transmission*

The pipe-dream rumor concerning the death of General Gowon adequately illustrates the transmission theory of rumor advanced by Allport and Postman (2). When this rumor started to circulate in October 1967, the details were that General Gowon had been invited to an important meeting in Kaduna by the Emirs (rulers) of Northern Nigeria. In the meeting the Emirs demanded to know from General Gowon when the war would end. General Gowon mentioned a date to them on which he believed that the war would end. That date came and passed but the war was still raging. The Emirs then invited Gowon for a second meeting also in Kaduna. At this second meeting, the Emirs demanded an explanation from Gowon as to why the war had not ended. General Gowon gave another date and convinced the Emirs that the war would end on or before that date. As before, the date came and passed, and the war was still raging. The General was for the third time invited by the Emirs to attend meeting in Kaduna. In this third meeting, the Emirs who were then in angry mood, demanded an explanation from General Gowon as to why the war had not ended on the date that he had told them that it would end. When Gowon could not give them any satisfactory reasons, the angry Emirs pulled out their swords which they had concealed under their garments and started to stab him one after the other till he dropped dead.

As this rumor spread, it underwent a process of levelling, and most of the details were lost, leaving only a very short sentence. "I heard that Gowon has died in Kaduna." Here Gowon's death and the city of Kaduna are the only details that were retained from the original version of the rumor. This retention of certain words and ideas as a rumor is transmitted from person to person is what Allport and Postman (1) termed sharpening. Again after this rumor had undergone the process of assimilation, the wish and the expectation of the rumor mongers must have been to hear that Gowon had died in Kaduna. Some people in Biafra believed that the war would end as soon as General Gowon died.

This rumor also illustrates the hypothesis advanced by Allport and Postman (1) that rumors concerning a given subject matter will circulate within a group in proportion to the importance and the ambiguity of the subject matter in the lives of the individual members of the group. To the rumor mongers the death of Gowon was important, since they believed that it would bring an end to the war and independence for Biafra. At the same time they did not know the alleged facts concerning the death of Gowon.

In contrast to this, the rumor that some people in Abiriba, a rural village in the then Biafra, tried to circulate in March 1970 (as far as the writer can recollect), did not circulate for many days: French soldiers had landed in Nigeria to drive away the Nigerian soldiers from Biafra. Twelve days after I heard the rumor, only two out of 15 persons I mentioned it to said that they had heard of it. One week later, not one of 15 other people that I asked had ever heard of it. Though there were some elements of ambiguity in this rumor, it lacked importance. The Biafrans, who for 30 months had suffered both death and hunger, could hardly be interested in another war starting again in their midst, while they were still making efforts to recover from the effects of a war that they had lost.

D. DISCUSSION

The results strongly confirm the Allport and Postman hypothesis that the essentials of rumor are importance and ambiguity: that is, the amount of rumor in circulation varies with the importance of the subject to the population multiplied by the ambiguity of the evidence. The results also illustrate the transmission theory of rumor. The three tendencies involved in the transmission—levelling, sharpening, and assimilation—were also demonstrated by the rumor concerning the death of Gowon.

A comparison of the distribution of the rumors collected by Knapp in the United States with those collected in Biafra is given in Table 1. There it can be seen that in the U. S. A. only 2 percent of all the rumors were of the pipe-dream type, while in Biafra this class of rumor made up 63 percent of the total. This wide difference might be attributed to the differences in science and technology in the two countries. When a country like the U.S.A. is involved in a war, she can manufacture for herself nearly all she needs to

TABLE 1
THE FREQUENCY OF U. S. A. (1942) AND BIAFRAN RUMORS COMPARED
(Percentages)

Classification of rumors	U.S.A.	Biafra
Pipe-dream (wish)	2	63
Wedge-driving	66	18
Bogey (fear)	25	12
Neo-pipe-dream	—	6
Unclassified	7	1

Note: U. S. A. data based on Knapp's (3) classification of rumors circulating in 1942. The table of rumors circulating in the United States at that time is available in Allport and Postman (1).

prosecute the war. This creates self-confidence among the people, for they are in control of the source of their armaments. Under this condition most citizens would believe that U.S.A. would win the war through her own self-effort. Consequently, this creates a condition unfavorable for the creation and spread of pipe-dream rumors.

In Biafra, the situation was different. Both science and technology are still at the incipient stages and superstitions reign. The prophecy made by the 80-year-old Russian woman soldier about Biafra destined to win the war gives a hint as to the extent to which some Biafrans believed that their enemies could be destroyed by means of incantation. In Biafra nearly all the armaments used by the Biafran soldiers were imported from abroad; the Biafrans had no control over the sources of supply. Even the few crude instruments that were produced in Biafra were made with imported materials. In this situation the Biafrans had to create many wishful rumors to help relieve the tensions and anxieties that gripped them.

The same table shows that 66 percent of wedge-driving rumors were recorded in the U.S.A. in 1942 in contrast to only 18 percent of this type of rumor in Biafra. Perhaps this high incidence of wedge-driving rumor in U.S.A. was due to the heterogeneous nature of the population of the country. During the national emergency of war, there is likely to be suspicion of divided loyalty. In World War II, Americans of Japanese origin were, because of fear of being in sympathy with Japan, kept in detention by the U.S. Government. In Biafra the population was homogeneous and as such there was not much fear of divided loyalty among the citizens.

The table also shows that there is a negative correlation between pipe-dream rumors and wedge-driving rumors. Where there are very small numbers of pipe-dream rumors, great numbers of wedge-driving rumors are created as in U.S.A.; but where the numbers of pipe-dream rumors are high as in Biafra, wedge-driving rumors tend to be less. A great number of wedge-driving rumors may tend to give people a feeling of security.

The neo-pipe-dream rumors found only in Biafra revealed the extent of hatred that the Biafrans had for the Russians and the British, the two nations that were helping Nigeria during the war.

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RACIAL DISCRIMINATION IN APARTMENT RENTALS: A REPLICATION*

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SUMMARY

To provide unambiguous evidence for racial discrimination in rentals, black and white confederates (six male, six female) visited 18 apartment house managers. They inquired about the availability of an apartment and the amount of rent and other fees. While no racial discrimination with respect to rents and fees was found, data revealed substantial discrimination with respect to apartment availability. Results are discussed in terms of other research on interracial interactions.

A. INTRODUCTION

In a recent study Johnson, Porter, and Mateljan (1) investigated the extent to which racial discrimination exists in apartment rentals. Their results showed that significantly fewer apartments were available to black relative to white couples and that significantly higher rents and higher miscellaneous fees were quoted to blacks. Johnson *et al.* interpreted these data as an indication of substantial racial discrimination in rentals. However, a close examination of their study reveals that at least part of the discrimination which they found may have been a function of age. Black couples (mean age = 21.9) were substantially younger than white couples (mean age = 28.2). Thus, rather than discriminating on the basis of race, rental agents may have been excluding younger renters in favor of older ones whom they perceived as more settled and responsible.

Unambiguous demonstrations of racial discrimination are of central importance in the establishment of racial equality. All too often efforts to ameliorate racial inequities have been impeded by whites who refuse to concede that inequities exist. Thus, using an improved design, the present study assessed the extent to which racial discrimination exists in apartment rentals.

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B. METHOD

Twelve confederates were recruited: three black males (mean age = 21.3), three black females (mean age = 22.0), three white males (mean age = 22.7), and three white females (mean age = 21.3). Confederates were assigned to one of three teams so that each team would be composed of a black and a white male and a black and a white female. Each team member was provided with a list of six apartments advertised in the local newspaper of the small midwestern town where the study was conducted. Lists supplied to members of different teams were nonoverlapping, while lists supplied to members of the same team were identical except for arrival times. Each confederate was told to represent himself/herself as a single individual who desired a one bedroom unfurnished apartment. Confederates were asked to obtain the following information: (a) availability of an apartment, (b) rent, (c) miscellaneous fees. To maximize the number of apartments potentially available to minority members, an effort was made to have both black confederates visit an apartment before either of the two white confederates did so. This order of visitation was maintained with respect to 12 of the 18 apartments. Confederates were not told that race was a variable of interest until after the study was completed.

C. RESULTS

Analysis of variance on rents and fees revealed no significant sources of variation. However, a factorial χ^2 analysis on apartment availability revealed a significant effect for Race ($\chi^2 = 10.01$, $p < .05$). Managers indicated that an apartment was available to more white (56%) relative to black (19%) potential renters. The present lack of evidence for racial discrimination with respect to rents and fees is in contrast to data reported by Johnson *et al.* This disparity in results may be a function of regional differences. The apartment availability data parallel Johnson's findings and provides unambiguous evidence for rental discrimination against blacks.

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IMPRESSION MANAGEMENT OF SEXUALLY MOTIVATED BEHAVIOR*¹

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SUMMARY

One hundred and thirty college males were unobtrusively observed buying "girlie" magazines. It was hypothesized that the buying of such magazines would be accompanied by additional behaviors designed to avoid anticipated negative reactions on the part of others. Results indicate that subjects who bought "girlie" magazines in comparison to those buying other kinds of magazines significantly more often requested a bag or also bought other merchandise. These findings were discussed in the context of the sex-guilt and face-saving literature.

A. INTRODUCTION

Although a substantial amount of public attention has been directed towards the proliferation of sexual content in today's media, few empirical investigations have explored the attitudinal or overt behavioral reactions of people who choose to be exposed to such material. Systematic investigation of the behavior that males engaged in concomitantly with their purchase of "girlie" magazines offered an interesting situation for naturalistic observation.

Within the context of Rotter's social learning theory (15), researchers (e.g., 12, 13, 14) have looked at how unacceptable behaviors are inhibited. Specific attention has been given to the process of inhibition as it applies to a "moral conflict situation" within the context of human sexual behavior. This behavior has been conceptualized as eliciting an approach-avoidance conflict, whose outcome is influenced by expectancies based on both external reinforcement contingencies (i.e., rewards and punishments controlled by others) and by an internal self-monitoring reinforcement process or guilt (3,

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¹ Reprints may be obtained from either author at the address shown at the end of this article. The authors wish to thank Jon Moselle, Michael Marmulstein, and Eric Mendelson for their aid in data collection and Pat Meglin for her assistance during the study.

5). These studies have focused on both the experimental induction and the psychometric measurement of sexual guilt with the use of such dependent measures as associative responses to double entendre words and perceptual defense scores to taboo sexual words. It has been demonstrated that subjects who inhibit a low degree of sexual guilt (i.e., a low degree of internally mediated negative reinforcement for violation of internalized standards of behavior) are more influenced by situational cues related to external negative reinforcement than are high sex guilt subjects (4, 12). Since it appears that subjects low on sexual guilt attend almost exclusively to external cues in governing their behavior, it seems plausible that some people would actively engage in behavior directed at avoiding or diminishing external sources of negative reinforcement.

Previous studies have been hindered by several inherent weaknesses. First, as Galbraith and Mosher (4) have noted, there is a need for new methods of manipulating external censure cues. Second, there is the possibility that uncontrolled variables, either inhibitory or disinhibitory, have influenced the laboratory investigation of "morally censured behavior." Milner and Moses (10) have found such effects when studying sexual responsivity changes as a function of the gender of a test administrator. Third, the experimental procedures which have been employed have produced situations in which the subject need not take any personal responsibility for their "sexual" behavior. For example, in Mosher (12) and Galbraith and Mosher (5) subjects were instructed to view pictures and make judgments of nude females after being told that the investigators were interested in characteristics attributed to the females: e.g., Which girl do you think would have the best personality?, Which girl do you think would most likely be a prostitute? Consequently, generalizations from these studies to the real life situation where individual choice governs sexual behavior may be highly tenuous.

Furthermore, other theoretical paradigms would suggest a conceptual extension beyond that of looking at sexual behavior as only constituting "a moral conflict situation." Thus it may be hypothesized that looking at pictures of nude females may not only be seen as a moral transgression among young adult males (as do most investigations), but also, and possibly more importantly, such behavior could also constitute a transgression of appropriate role behavior—that of an adequate male, within a specific situation.

The concept of "face saving" (6, 7, 8, 11) is relevant to this discussion. Investigations by Brown (1) and Brown and Garland (2) have demonstrated

that threats to "face" give rise to behaviors which may be classified as directed towards the protection (and, if necessary) the restoration of "face." Thus it is very likely that the behavior of individuals in a "moral conflict situation" of a sexual nature may also be influenced by their desire to save face as well as to avoid guilt.

In view of the above discussion, the present study was formulated in an attempt to reduce possible experimental confounding effects, employ appropriate naturalistic external censure cues, expand the conceptual framework of coping behaviors to include externally directed actions, analyze possible avenues of such external coping behavior, and study behaviors which allow for a high degree of generalization to situations as they occur in the natural environment.

On the basis of the hypothesis that male college students who buy "girlie" magazines, such as *Playboy* and *Penthouse*, in comparison to those who buy magazines such as *Time* and *Newsweek*, will behave in such a way as to lessen the probability that they will receive external negative reinforcement, it was predicted that they would more often (a) request a bag to put their purchase in (an attempt to protect future face), and (b) buy other goods, such as gum or candy (an attempt to restore present face).

B. METHODOLOGY

The subjects consisted of 130 males who were unobtrusively observed as they bought magazines at the SUNY, Albany, campus bookstore. It was assumed that they bought magazines at their own discretion and that they were unaware that they were being observed for research purposes.

Data were collected on all males who bought magazines of any kind during the observational periods. According to the bookstore manager, most magazines are bought after the noon hour; therefore, observations were made between the hours of noon and 2 p.m. on six consecutive regular school days.

Students were observed at a point near the cash register which both allowed the observer a clear and unobstructed view of the counter and placed him in the midst of traffic, thus making him relatively unnoticeable. Four male students served as observers at different times and recorded the name of each magazine that each subject bought, whether or not he requested a bag, and whether or not he bought other items as well. Because of the objective nature of the data to be recorded, reliability was not considered to be a problem, and no reliability checks were made. Each observer was provided

with a standard check sheet for recording his observations; the categories were well defined, and the procedures were discussed and agreed upon by all observers before the data collection began.

The same female employee worked as the cashier throughout the data collection. She was instructed not to offer bags to any male customers buying magazines.

C. RESULTS

All magazines were categorized. *Playboy*, *Penthouse*, and *Oui* constituted the sex or "girlie" category, and such magazines as *Newsweek*, *Time*, *Sports Illustrated*, etc., constituted the nonsex category.

Statistical comparisons were made between subjects who bought sex magazines and those who bought nonsex magazines. In regard to requesting a bag, 14 of 54 males buying sex magazines and three of 76 males buying nonsex magazines did so. This difference is significant at .005 level by Fisher's Exact test. Thirty-one of 54 males buying sex magazines also bought other goods, while 24 of 76 males buying nonsex magazines did so. A test of this difference yielded a χ^2 of 8.62 which is significant at the .01 level.

Significant differences ($\chi^2 = 18.5$, $p < .005$) were also found between buyers of sex magazines and buyers of nonsex magazines when the categories of requesting a bag and buying other goods were combined. Thirty-seven of 54 sex magazine purchasers and 24 of 76 purchasers of nonsex magazines did one or the other. Therefore, over 68% of the subjects who bought the sex magazines engaged in some type of actions which can be viewed as an attempt to reduce external negative reinforcement.

D. DISCUSSION

The results clearly indicate that behaviors with a sexual connotation lead to an active attempt by male students to avoid or lessen external negative reinforcement. By either asking for a bag, or buying other items (the majority of subjects chose only one alternative) subjects employed face-saving techniques designed to lessen both current and future sources of negative reinforcement. Such behaviors can also be viewed as a means of impression management (17). Thus, males buying sex magazines from a female cashier may have attempted to avoid giving the impression either of being inadequate males, whose only recourse to sexual satisfaction is vicarious, or "oversexed" and preoccupied with sexual stimuli. Furthermore, buying additional items such as gum or candy can be seen as a means of saying "I really came in to

buy other things." Such a contention is supported by Kelley's (9) statement that "the role of a given cause in producing a given effect is discounted if other plausible causes are also present" (9, p. 113). By buying other goods, subjects lessen the probability that the buying of sex magazines will be the sole basis on which others make attributions about them. By engaging in these face-saving behaviors, the subjects avoid public embarrassment for inappropriate or incompetent role behavior. Although this study does not enable one to clearly separate those behaviors directed against perceived negative reinforcement for moral transgression from those for role transgressions, both concepts are believed relevant for understanding situations involving behaviors of a sexual nature.

Previous research has typically, through psychometric measurement, identified high and low sex guilt individuals. Although the present naturalistic study did not allow for such measures, a recent study by Schill and Chapin (16) is pertinent in this regard. They found that low guilt, as compared to high guilt subjects, chose to read, and read for a significantly longer period of time, sex magazines. Thus it can be assumed that the results of the present study indicate some of the avenues that low sex guilt subjects may select in avoiding external negative reinforcement.

This study indicates that unobtrusive techniques can be successfully utilized in studying complex motivation in natural settings. Further, the results suggest that, in spite of the current "sexual revolution," college males are not as free in their sexually related behaviors as one might expect. Impression management and face-saving strategies are still influential in shaping their behavior.

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LEVELING EFFECT OF COACTION ON JUDGMENT OR RETEST EFFECT?^{*1}

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SUMMARY

To test the reliability of Allport's 1924 finding of a leveling effect of coaction on judgment against the alternative of a retest effect, 80 Ss made two sets of 55 judgments of a series of angles (30 to 60 degrees) using the method of single stimuli. Four conditions were used: Alone-Alone, Together-Alone, Alone-Together, and Together-Together with each set of judgments being made either alone or in the presence of a coacting confederate. A significant retest effect was observed, as Ss used the end categories less in the second set of judgments. The leveling effect was not significant.

A. INTRODUCTION

Allport (1, 3) reported a leveling effect in human judgments which presumably was due to the mere presence of others doing the same thing. Allport found that people tended to judge end items in a series as less extreme in the coacting situation. The results were especially convincing because a similar effect was found in both affective (odors) and nonaffective (weights) judgments, and because the alternative explanation of distraction was effectively ruled out by the fact that the together and alone conditions did not differ as to accuracy in their judgments of the weights. Although Allport's study has attained wide acceptance, being routinely summarized in social psychology textbooks (e.g., 9, p. 243; 10, p. 109), the leveling effect has actually received little support subsequently. Farnsworth and Behner (7) reported what can best be seen as only a partial replication. In a subsequent experiment, Farnsworth (6) reported no evidence whatever of a leveling effect in scaling judg-

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¹ The study was done while the third author, now at the University of Minnesota, was a Predoctoral Fellow in the Social Psychology Training Program at the University of Missouri-Columbia, which is supported by a grant from the National Institutes of Mental Health, Bruce Biddle, principal investigator. The authors wish to thank Bonnie Beck, Keith Campbell, David Kelley, Joseph Rataczak, and Robert Zajonc for their assistance and advice on this topic.

ments of statements regarding pacifism or militarism. In a more recent study, involving clinical judgments by students, Walker, Hunt and Schwartz (11) reported lower interperson variance for a coacting situation than for alone judgments. However, while this may be interpreted as evidence of a leveling effect, the authors did not present the data for the directly relevant comparisons: that is, comparisons of the frequency of use of the end categories and the ratings of the end items in the series.

In addition to the lack of strong evidence reviewed above, there are further considerations, theoretical and empirical, which justify questioning the reliability of the leveling effect. In his synthesis of the material on social facilitation, Zajonc (13) maintained that Allport's (3) data on the tendency to avoid extreme judgments while in the presence of others had little bearing on his argument concerning coacting situations eliciting dominant responses. Nevertheless, if the presence of other people is arousing, it seems unlikely that aroused people would avoid the use of end categories. The finding of Hovland and Sherif (8) that ego involved people were more likely to use end categories may be pertinent, if one is willing to assume that ego involvement and arousal are closely related, though not identical, concepts. This would lead, if anything, to expect the opposite of a leveling effect to occur as a function of the presence of other people.

Recently, Cohen (5) attempted a simple replication of Allport's research on judgments of weights and odors. This was difficult, since Allport (1, 3) did not state what the odors were nor did he give the actual weight values. The results were not indicative of a leveling effect. In a study of Thurstone scaling, Brent (4) had people sort a set of 54 statements twice with a 10-minute, unrelated task intervening. He found a significant tendency for people to use the end categories less during the second sorting. This retest effect makes sense if one assumes that the novelty, strangeness, or general arousing potential would be less during the second sorting. This led us to wonder and examine whether Allport, using people as their own controls, had adequately controlled for an order or retest effect.

It appears that Allport (2, 3) was aware of this as a possibility on his facilitation research. For instance, on the free association and writing refutational argument tasks, subjects participated in several sessions over extended time periods. He also discarded the results of the first session if it proved to be the worst of its kind (alone or together). However, on the judgments of weights and odors, an effort to control for a possible retest effect was not apparent. In view of the foregoing considerations, it was decided to conduct

an experiment, carefully designed to provide evidence of a retest or a leveling effect. While this was intended to be on the order of a critical experiment, it was still possible for some evidence to be found of both effects. Specifically, then, a leveling effect would be observed if people, making judgments in a coacting situation, tend to use the end categories less or tend to judge the end items as less extreme than people making their judgments alone. A retest effect would be observed if people used the end categories more the first time they made judgments of a stimulus series than they did the second time.

B. METHOD

1. *Subjects and Procedure*

Ss were undergraduates who received course credit for participation. Ss were told it was an experiment on slant perception, the ability to judge the relative size of a series of angles presented one at a time. Instead of estimating the number of degrees, they were told to use 11 numbers, 1 to refer to the smallest angles, 11 the largest, and the other numbers to refer to the various gradations between 1 and 11. Each S was given a sheet with 55 blanks to record the judgments. Two sample angles, 30 degrees and 60 degrees, were shown to the S, and it was stated that these were successively the smallest and largest angles in the series about to begin. After answering any questions, E informed S that these would be shown without interruption by setting the projector on automatic. E then turned the Carousel projector on automatic, turned a light off so that the room was semidarkened, and left the room. Each angle was shown for four seconds.

After the 55 judgments had been completed, E returned and gave S a two page form, which consisted of items from the Dogmatism scale. When this filler task was completed, S was told that the final part of the experiment was to make a second independent series of judgments of the angles. E then showed the sample angles once again and asked if there were any questions. E then set the projector on automatic and left the room as before. The sheet recording the first set of judgments was not visible to S while making the second set of judgments. When the 55 judgments were completed, E returned, informed S that the experiment was finished, answered any questions, and expressed thanks to S for participating.

2. *Stimulus Materials*

The stimulus materials consisted of 55 slides of an angle with the baseline constant and horizontal. The second line varied in the amount of inclination,

by three-degree intervals, from 30 degrees to 60 degrees. Although the method of single stimuli (12) was used for this experiment, pretesting using paired comparisons indicated that an accuracy level of about 80 percent was obtained for adjacent angles (i.e., three degrees difference) within this range. This kind of stimuli was chosen over weights or odors because we had previously standardized discrimination levels for the angle stimuli, and the use of slides permitted a standard exposure time without the experimenter's presence. Each of the 11 angles appeared five times in the series which was randomly ordered with the provision that each angle appear once in every 11 presentations. The slides were projected onto a screen about seven feet from *S*. In all cases, *S* sat just to the left of the projector.

3. *Experimental Conditions*

The preceding describes what happened in the control condition or what is called the alone-alone (A-A) condition. The other three conditions differed from the preceding condition only in regard to the presence or absence of a confederate (*C*) posing as a second *S*. *C* arrived after *S* in all cases, explaining that he was "the fellow who called you, couldn't make it at the scheduled time." In the together-together condition (T-T), *C* (an undergraduate male) arrived during the initial instructions and participated in all three parts of the experiment. In the together-alone condition (T-A), *C* left after the filler task, the impression being given to *S* that *C* had done the other part on the previous day. In the alone-together condition (A-T), *C* arrived during the filler task, gave the impression that he had done all but the final set of judgments on the prior day, and then participated with *S* during the second series of judgments of the angles. In all cases, *C* sat just to the right of the projector which was slightly forward so that *S* and *C* could see each other but not each other's answer sheet. *E* and *C* were the same individuals throughout the study. No *S* showed any suspicion of the authenticity of *C*'s act.

A total of 80 *Ss* participated in the experiment, 20 (11 women and nine men) in each of the four conditions. The order in which the conditions were done was randomly determined.

C. RESULTS

1. *Retest Effect*

The simplest and most direct measure of a retest effect is obtained by simply counting the number of times the two end categories (1 and 11) were used. When the presence or absence of *C* was disregarded, and the first set

of judgments of all Ss were compared with their second set of judgments, 72 percent of those who changed tended to use the two end categories less in their second set of judgments ($z = 3.60$, $p < .0005$). This trend appeared in each of the four conditions.

2. *Leveling Effect*

Since a significant retest effect occurred, it was deemed advisable to look for a leveling effect with the use of independent samples. This was done by considering only the first series of judgments, comparing those 40 Ss who made their first set of judgments alone (A-A and A-T) to the 40 Ss who made their first set of judgments in the presence of C (T-A and T-T).

For the relative frequency of usage of the two end categories, the results are in the direction of a leveling effect, but the differences are well within the range attributable to chance fluctuations. The alone Ss used the end categories an average of 9.02 times in their first set of 55 judgments, while the together Ss used them an average of 7.85 ($t = .96$, $df = 78$, NS). These 55 judgments were also broken down into five blocks of 11 judgments each, and the two conditions did not differ reliably on any of the five blocks.

An analysis was also made of the data in the manner of Allport (3) and Farnsworth and Behner (7). The 40 alone Ss were compared with the 40 together Ss as to how they judged, on the average, each of the 11 angles during their first set of 55 judgments. The alone Ss judged the smallest and the largest angles to be 2.69 and 10.38, compared to 2.71 and 10.25 for the together Ss. These differences, however, as well as those for each of the other nine angles, produced nonsignificant t values indicating that no dependable evidence of a leveling effect was detected.

If we consider only those Ss who made one set of judgments alone and one set together with C (A-T and T-A), and if we ignore the order, we have a related sample of 40 Ss. Among these 40 Ss, a slight but not significant ($z = 1.14$) trend in the direction of a leveling effect was observed.

D. DISCUSSION

The major consequence of this paper is to call into question the reliability of Allport's (1, 3) widely cited finding of a leveling effect of coercion on human judgment. A rather substantial order effect was observed, and this should be taken into account in studies of a coercion effect on human judgment.

Although the retest effect was by no means invariant, there was a significant

tendency for Ss to use the end categories less the second time. When a retest effect, such as this, has been detected, the best strategy in looking for a leveling effect is to use independent samples. When this was done in the present study, no significant leveling effect was observed. It was the A-T condition in which the retest and leveling effects worked in the same direction, and thus this condition could not produce by itself convincing evidence of a leveling effect. When Ss in the A-T condition used the end categories less in their second judgments, it may be more parsimonious, given the consistency with the overall results, to attribute this to a retest effect. In fact, it seems plausible to suggest that a similar pattern could have occurred in Allport's (3) study, but remained undetected as a result of the inadequacies of his design and analysis.

A further consideration concerns whether procedural differences between Allport's study and the present one can account for the obtained differences. The impression given by Allport (3) is that the leveling effect has considerable generality and is not limited to the domains of odors and weights. It seemed a small modification to use slant perception for the present study. It could be that the stimuli Allport used were more different from each other than those used by us. However, it appears that the slope of our means is about the same as those of Allport (3, pp. 276-277). Yet, it is difficult to tell, as Allport labeled neither the ordinate nor the abscissa. Only future research, varying the differences within the stimulus series, can produce a definitive answer.

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IMPRESSION FORMATION AND DANGER RECOGNITION IN EXPERIENCED POLICE OFFICERS*¹

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SUMMARY

Police officers of varying seniority were interviewed to investigate cue preferences utilized in interpreting citizen behavior. Cues were generally classified as being either dispositional or situational in origin. Attributional processes were recorded and compared across two types of interaction situations, one involving personal danger, the other being relatively nondangerous.

It was found that for all officers, contextual-situational cues were utilized significantly more than dispositional characteristics to infer the presence of danger, with the opposite being true of danger-free settings. Implications for research on attribution processes and nonverbal communication are discussed. Various effects of experience upon impression formation processes are also discussed.

A. INTRODUCTION

The process of impression formation may be viewed as a fundamental aspect of interpersonal encounters. Thus, one person's behavior toward another may be conceived as flowing directly from his inferences about the other person's intentions and goals in a situation, as well as from the readiness and flexibility with which these inferences may be refined as the encounter progresses.

Many investigations have focused on a detailed analysis of such processes. Indeed, this area of research is beginning to give rise to rather detailed models designed to explicate the attributional process (e.g., 7). The present

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An abbreviated report of this investigation was presented at the American Psychological Association Convention, Montreal, Canada, 1973.

investigation was designed as an extension of this research tradition to a somewhat different subject group: namely, police officers. While many subject groups have contributed to impression formation research, little effort has been made to apply such formulations to police-citizen encounters. This seems unfortunate, since such interactions are often thought to be one of the root sources of many aspects of contemporary social problems. Indeed, police-citizen interactions not only fall squarely within the domain of impression formation models and represent encounters of primary social significance, but they frequently occur under conditions which could amplify our understanding of more general interaction processes. That is, they typically occur within an atmosphere of heightened interpersonal involvement, frequently under stressful and dangerous circumstances, and often with amazing rapidity. Moreover, they often occur under conditions which require action based on limited, incomplete, and occasionally unreliable data. Thus, police-citizen encounters may define an arena of interaction of special interest to the study of impression formation (3).

The present study was designed as an heuristic attempt to explore some aspects of the dynamics of impression formation and attributional processes in groups of police officers of varied experience. A secondary consideration was that of investigating some aspects of the perception of interpersonal danger and the cues which may contribute to its recognition. This aspect of the investigation grew out of the belief that the problem of recognizing danger and dealing with its emotional toll represents a fundamental dimension of the police officer's role (10).

One variable of interest which might have an important effect upon danger recognition is experience. It was felt that data collected from police officers of varying seniority, in terms of length of time served as a patrolman, would provide a meaningful starting point for an inductive examination of the processes involved in impression formation.

B. METHOD

1. *Subjects*

A total of 51 police officers from the Houston Police Department were interviewed. All were in the patrol division and wore uniforms during their duty hours. For the purposes of the study, it was desirable to compare the relatively new, inexperienced officers with those who had served a longer period of time. After consultation with the Department, it was decided that a meaningful selection criterion for the inexperienced sample was approximately one year or less as a patrol officer. For the more experienced

groups, five years or more of service was the criterion employed. Of the 51 officers selected, 22 comprised the inexperienced group, with 29 officers included in the experienced subsample. For the inexperienced group, the range of time served as a patrolman was 6-15 months with an average of 10 months as a police officer.² The range of service for the experienced group was 5-19 years with a mean of 9.12 years as a patrolman with the Department. The sample was made up of 48 Anglo, two Mexican-American, and one Black-American.

The interviewees were selected by administrative personnel within the Department. An attempt was made to select those officers most skilled in verbally communicating in the interview situation, and such officers were selected from each of the four shifts from all five substations within the city of Houston and the central station (downtown). All officers were interviewed immediately prior to the beginning of their work shifts. Thus, an attempt was made to sample a cross-section of officers which was representative of the Houston Police Department with respect to seniority, location, and time of assignment.

2. Interview

The interview consisted of a series of open-ended questions and required between 30 and 60 minutes to complete.³ The questions were categorized into two major sections consisting of (a) general person-perception and attributional processes, and (b) perceptual and attributional aspects of danger situations as experienced by the interviewee.

The first section of the interview attempted to record and categorize dispositional, behavioral, and situational features commonly used by the officer to form impressions of citizens with whom he comes in contact. The initial question was the following:

What traits, characteristics, features, etc., do you look for when you are interacting with a person in your role as a police officer? That is, how do you go about forming an impression in terms of the qualities and situational aspects you find useful and meaningful in order to know as much about him as you can from your initial brief exposure to him?

Responses to this question were classified as being either person-related or

² One officer had 2½ years experience on the force but was included because he had only one year of actual patrol duty.

³ Appreciation is expressed to Janet Mortel, who conducted all of the interviews. Since interviewing was done during all day shifts, a great deal of commitment to the project was required. Her enthusiasm in completing the study, her interviewing skills, and her many contributions to analyzing the data were invaluable assets to the investigation.

situation-related. If the response fell under the person-related category, the qualities, characteristics, or traits mentioned were coded as being either overt or covert.

Two additional questions aimed at identifying (a) the behavioral cues employed to infer the first two covert person characteristics mentioned and (b) the causal attributions utilized to explain those characteristics. This was accomplished by asking the respondent *how* he knew when a person was (covert characteristic) and *why* people were generally like that (*cf.* 1).

The second section of the interview requested that the officer describe a situation involving an interaction with a citizen which had become unexpectedly dangerous for him (the officer). After describing the situation, the officer was asked about aspects of the citizen's behavior, the situation apart from the citizen's behavior, and the officer's own behaviors that were important in defining and interpreting danger in the interaction.

Two remaining questions were then presented. The first probed the officer's perception of departmental esteem and status that would result from a brave act on his part. The second question requested a description of the most frequent type of contact with citizens the officer typically experienced, including the number, ages, sex, and ethnic group of the citizen(s) involved.

C. RESULTS

The first segment of the interview invited each officer to indicate which characteristics he found useful in forming impressions about another person. The number of overt, covert, and situational characteristics reported by the officers were tabulated and analyzed by a mixed analysis of variance design. The mean number of characteristics reported by each group of officers is presented in Table 1. It can be seen that on the average, approximately 6.8 characteristics were mentioned by the officers, with the two seniority groups being quite comparable ($F < 1.00$; $df = 1/49$; $p > .10$). The most striking

TABLE 1
MEAN NUMBER OF IMPRESSION-RELEVANT CHARACTERISTICS
REPORTED BY JUNIOR AND SENIOR OFFICERS

Officers	Qualities			Total
	Overt	Covert	Situational	
Junior	3.40	3.00	.27	6.68
Senior	3.17	3.06	.65	6.89
Combined	3.27	3.03	.49	6.80

result of the analysis emerged from an examination of the types of characteristics mentioned. Both groups focused on person-related characteristics, both overt and covert, about equally. Moreover, both groups just as clearly neglected situation-related characteristics in their impression formation ($F = 47.12$; $df = 2/98$; $p < .001$).

The characteristics initially mentioned were combined into categories in order to determine whether the groups emphasized different types of characteristics in forming their impressions. For this purpose, only minimal linguistic modifications were allowed in combining characteristics with categories. It was found that the senior officers employed a somewhat larger number of characteristic categories, although differences were not striking. Both groups found characteristics, such as whole body movements, reflexive actions, hand movements, dress, appearance, and the way questions are answered to be meaningful overt characteristics, with nervousness, hostility, intelligence, and cooperativeness to be meaningful covert qualities.

Each officer was interviewed in more detail concerning his utilization of two of the covert characteristics he mentioned first during the initial phase of the interview. Thus, he was asked "how do you know when a person is (specific characteristic mentioned)". He was then asked "why are people like that?" Both questions were asked for each covert characteristic for each officer in an effort to focus more explicitly on the dynamics of the inferential process.

The "how do you know" question was expected to elicit the evidential base or cue configuration, involved in applying the inference. These cues were analyzed in two ways. First, they were coded for their source: i.e., facial-vocal, expressive-behavioral, or stylistic-situational information. Thus, the cue sources of interest varied from a somewhat more molecular focus on facially and vocally based information to a more molar focus on the person embedded in a total behavioral and situational context. The second step in this analysis involved noting the form of the configuration of discrete cues associated with each inference.

An analysis of the number of cues related to each inference revealed an average of 3.0 cues per configuration for the junior officers and 2.7 cues for the senior officers. Thus, the configurations cited were composed of several discrete cues, and the overall size of the configurations did not differ between the officer groups ($p > .10$). The complexity of the configurations did differ between the two groups, however. An analysis of the number of different cue sources contained in each configuration revealed that the junior

officers tended to include cues from more varied sources in formulating their inferences than did the senior officers. The number of junior officers who relied on two or more cue sources was significantly greater than the number of senior officers utilizing similarly complex inferences ($\chi^2 = 4.24$; $df = 1$; $p < .05$).

The "why are people like that" question was expected to elicit higher order inferences based on the key traits or characteristics initially mentioned spontaneously. These responses were coded according to the overall value projected by the officer (i.e., whether relatively favorable or unfavorable), the form of the higher order inference involved (i.e., personal or dispositional traits *versus* experiential or situational qualities), and the durability of the inferred characteristic (i.e., whether it was viewed as a more permanent, long-term trait or quality, or a more ephemeral, situation-specific one).

Overall, the officers produced an average of 4.3 inferred characteristics, with the preponderance being negatively toned (76%), personal traits (67%) of a durable sort (57%). Two significant relationships emerged with a more detailed analysis, however. In examining which officers tended to focus to a greater degree on the more durable qualities, it was found that senior officers tended to focus on these more lasting types of traits, such as "open minded," "well educated," "lack of intelligence," "resentment of authority," etc., to a greater degree than the junior officers, who more often mentioned ephemeral, situation-specific qualities, such as "having something to hide," "uncertainty about being stopped," "fearful," "worried about arrest," etc. ($\chi^2 = 3.29$; $df = 1$; $p < .10$). A second result of interest focused on the evaluative tone of the inferred qualities reported. While the preponderance of the qualities inferred appeared to reflect a negative evaluation on the part of the officer, this tendency was significantly greater for the junior officers ($\chi^2 = 5.21$; $df = 1$; $p < .025$). On the average, the senior officers mentioned one positive inference within the network of implications they developed. This was less frequently true of the junior officers. They more frequently reported wholly negative networks of inferred qualities.

The overall pattern of data concerning the formation of impressions rather clearly shows that the two officer groups focused on an equivalent number of personal characteristics in forming impressions of others. This focus on personal characteristics occurred to the relative neglect of contextual and situational characteristics. The dynamics of forming the impressions which are employed seems to be based on configurations of cues of varying com-

plexity which seem to lead, by way of the key traits or characteristics initially mentioned, to higher order inferences which fall within a structure network of qualities emphasizing personal dispositions resembling durable traits which are frequently negatively toned.

It is interesting to note in this connection that the officers' inferential processes tended to be multidimensional, complexly structured, and somewhat distinctive between officer groups in meaningful ways. It is also interesting to note that by and large they tended to adopt a trait approach to the understanding of other people. Thus situational, contextual, and experiential dimensions of understanding others tended to be relatively neglected.

The second major phase of the interview focused on the officer's experience with danger and dangerous situations. These questions were quite brief and preliminary, as they were conceived as exploratory in form. The procedure employed focused on a specific occasion as a critical incident and invited the officer to describe it as fully as possible.

In all, 43 dangerous incidents were listed by the officers. Seventeen junior officers (77%) and 26 senior officers (89%) described incidents with sufficient clarity to allow analysis. As described, the incidents were most frequently face-to-face encounters (as opposed to more distant encounters as might occur with a sniper) in which one officer interacted with one or perhaps two citizens in different kinds of situations where, if an audience were present, it was not in the focus of the officer's attention.

The specific cues which each of the officers reported had led him to identify the situation as dangerous were categorized according to the system used previously: namely, the degree to which attention was focused on facial-vocal behavioral-expressive, or stylistic-situational information. Results indicated that the majority of the specific cues grew out of molar behavioral and contextual information. Only eight of the 43 danger cues referred to molecular facial-vocal behavior.

The degree to which information from the other person or the situation within which the interaction occurred was most meaningful to the officer in alerting him to the presence of danger was asked of each officer at the close of the interview. Overall, 61% of the officers reported that the situation was of primary importance in inferring the presence of danger. Analysis of these judgments revealed that the senior officers reported a greater reliance on situational information in recognizing the presence of danger. Approximately 69% of the senior officers reported some degree of reliance on the situation in making their judgments as compared with 50% for the

junior officers. This difference between officer groups is interesting, but not statistically significant ($\chi^2 = 2.02$; $df = 1$; $p > .10$).

The importance of molar behavior and situational cues in recognizing the presence of danger in interpersonal encounters can be further explicated by comparing the cues mentioned in discussing dangerous incidents with those mentioned in discussing the more general formation of standard impressions of other people (the first phase of the interview). The inferential data mentioned most frequently in forming standard impressions of others focused most directly on facial-vocal cues. This type of information comprised 54% of the cues reported. A comparison of the overall reliance on molecular cues (primarily facial-vocal information) as compared to a more molar situation analysis (primarily behavioral-expressive and stylistic-situational information) was performed for the two types of inference: i.e., standard impression formation *versus* danger recognition. The result was quite striking ($\chi^2 = 19.18$; $df = 2$; $p < .001$). Gross behavior and contextual information were clearly more meaningful in formulating inferences about danger than was the case for the standard impression formation situation in an encounter.

The comparison of information gathering processes involved in standard interpersonal inferences, as contrasted with danger recognition situations, reveals the presence of a considerable, and perhaps important difference. It would appear that the officer's "perceptual scan" is more significantly broadened when dealing with threatening and dangerous encounters than when engaged in ordinary, perhaps more fully predictable interactions. Under these latter conditions, a greater focus of attention appears to be directed toward facial, vocal, and fine motor behavior expressed by the other person as the salient figure in the encounter. Contextual and background factors seem to take on more salience in evaluating encounters for potential danger, however.

In response to the question probing the perceived relationship between brave acts and departmental status, most officers predicted an increase in status resulting from such behavior, although this expectation was more prevalent for the junior officers (77%) than for their seniors (58%).

The question dealing with the type of contact the officer typically experiences revealed that one-to-one interactions were most frequent for all of the officers. However, junior officers tended to interact with a younger age group than did their seniors. For the junior officers, 81% indicated the 21-25 year old age group as the most predominant type, whereas 51% of the senior officers specified the 26- to 35-year-olds as being in contact with most frequently.

D. DISCUSSION

The results of the present investigation can be viewed from several perspectives. One very important implication of the findings focuses on the beliefs officers appear to hold about the determinants of behavior. The characteristics the officers mentioned most frequently during the impression formation phase of the interview were person-related qualities which could be described as enduring personality traits. Thus, more or less stable inner determinants of behavior and their closely associated overt expressions tended to be emphasized, with relatively little attention focused on such external causal determinants as the person's history or present behavioral environment.

A more detailed analysis of the data revealed that experience may be related to this implication in two important ways. On the one hand, relative to the junior officers, senior officers tended to emphasize experiential and contextual determinants of behavior when they were considered. On the other hand, senior officers also tended to focus somewhat more emphasis on the more enduring personality traits than did the junior officers, who tended to mention the more transitory and ephemeral personality oriented qualities when they were cited. Thus, experience on the force appears to modify the officer's trait approach to impression formation to some extent.

One implication of these findings bears on the extent to which such changes in interpersonal orientation may be associated with more effective interactions with citizens. If some level of agreement between the officer and citizen in understanding the determinants of the citizen's behavior influences effectiveness, this relationship could be fundamentally important. Several theorists have pointed out that people seldom think of their own behavior as determined by traits or lasting inner determinants, such as hostility, but rather tend to focus on contextual "causes" of their behavior (4, 6, 9). Thus, greater attention to contextual determinants of citizens' behavior may be associated with meaningful differences in interaction patterns.

A second major implication of the data focuses on the dynamics of the inferences developed by the officers. The inference sequence seems clearly to be multistaged and probabilistic in form. At the cue-searching end of the sequence, senior officers appeared to be somewhat more idiosyncratic and simplistic than junior officers in searching for preferred information. The tendency for junior officers to interact with a younger age group of citizens may be related to this finding. Similarly, at the implication-inference end of the sequence, senior officers appeared to be more variable and complex

than junior officers. The relative merits of either of these approaches is a complex issue. Generally, such a result appears well in line with research literature concerning the effects of experience and offers some validation for the method of investigation employed, although more varied and controlled approaches to the investigation of impression formation would be desirable in future work with police officers.

Probably the most significant result of this investigation concerns differences in cue search and utilization patterns employed during standard impression formations as opposed to detecting the presence of danger. Under threatening conditions the range of information sought by the officers seemed to broaden to a considerable extent, in that far greater emphasis was placed on factors embedded in the total behavioral and situation context. Such a finding appears unexpected at first glance. That is, one interpretation of a number of different studies of the behavioral consequences of stress is that a general constriction and inefficiency often develops in areas of complex cognitive function (e.g., 5, 8). This type of dysfunctional behavior clearly was not reported by the officers in the present study. What was reported could be described as a redirection of attention away from the particular person (or persons) as "figures" in a less well defined perceptual field confronting the officer to a concern with the person embedded in a well differentiated, total, behavioral-situational field. Thus, heightened attention to the behavioral environment confronting both the officer and the citizen seemed to be indicated. Whether this represented a true perceptual broadening or a shift in attention to cues which may have acquired greater salience for such inferences is hard to determine from the data available.

The study of cue utilization in the formation of impressions in police-citizen interactions yields a number of important questions. One such question involves the effect of varying amounts of general background information the interaction participants have concerning one another and how this may counteract stereotypical expectancies regarding the police and citizen role behavior. In addition, the study of the utilization of nonverbal cues for behavioral interpretation would seem to be warranted. In a mutually contingent interaction, the attempt to interpret the other's behavior is complicated by the possibility that the interpreter is himself emitting nonverbal cues which concurrently affect the other's behavior. For example, ethnic group differences in personal spacing patterns reported by Baxter (2) could result in misleading, nonverbal communication between the police and minority groups. The suggestion of Weiner *et al.* (11) that an emphasis

on the study of encoding, as well as decoding, of nonverbal behavior is important to fully understand the communication process seems appropriately applied to the police-citizen interaction setting.

Implications for police-citizen cue interpretation are too numerous for the present discussion. The need for more refined analyses of behavioral expression would seem most useful and appropriate for future research dealing with police-citizen relations.

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EFFECTS OF MALE AND FEMALE ENDORSEMENT OF
BELIEFS ON THE PROBLEM SOLVING CHOICES OF
HIGH AND LOW DOGMATIC WOMEN*¹

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SUMMARY

Two hypotheses concerning women's tendency to devalue female endorsed beliefs about problem solving activity were assessed. Subjects were 45 high and 45 low dogmatic female university students. It was predicted that high dogmatic women would more frequently accept male endorsed beliefs. During the problem solving period, subjects were given alternate hints, one of which was more appropriate for problem solving and reputed to be endorsed predominantly by females; the other hint was less appropriate and reputed to be endorsed predominantly by males. In the control condition, neither alternative received endorsement. In the female endorsed belief condition, experts recommended the hint; in the male endorsed belief condition, experts did not recommend the hint. A relationship was also predicted between a devaluation of female endorsed beliefs and negative attitude toward females in problem solving roles. Results supported the hypotheses and were interpreted in terms of the high dogmatic females having a traditional male authority orientation.

A. INTRODUCTION

The tendency of people in Western society to devalue feminine competence with respect to effective problem solving has frequently been attributed to a kind of male superiority and male chauvinism. The anecdotal and observational evidence suggests that men are unwilling to grant to women the same cognitive, motivational, and personality characteristics that make for effective problem solving among men.

Recent research and discussions (1, 2, 6, 11, 21) have evaluated an alternative interpretation in which the attitudes of Western women and their

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¹ Requests for reprints should be addressed to the author at the address shown at the end of this article.

own self-prejudices regarding their competence in problem solving have much relevance. In the alternative interpretation, the devaluations of feminine competence are seen as a kind of nineteenth century dogmatism defensively reasserted by women themselves (13). The authors attributed the persistence of the ambivalent self-prejudicial attitudes of Western women toward intellectual and problem solving activity to certain "anachronistic images of womanliness and work" (13, p. 358). Within this framework the devaluations of feminine competence are seen as a product of women's dogmatic tendency to stereotype the male and female authority role. One implication of this interpretation is that women in Western society who devalue feminine competence would be expected to associate negative consequences with assuming high level positions involving problem solving responsibilities. Horner (11) described this tendency as the "motive to avoid success." She attributed it to the anxiety of the Western woman over her loss of femininity and the possibility of social rejection if women excel in problem solving pursuits which traditionally have a masculine label.

One broad conclusion that can be drawn from the existing research in problem solving behavior (4, 15, 18, 19, 20) and its interaction with the personality attributes of women in competitive problem solving careers (1, 6, 7, 8, 10, 11, 12, 14) is that women in Western society experience more psychological obstacles in problem solving behavior because of their closed-mindedness in the uncritical acceptance of male authority. In other words, the ability of women as a group to evaluate problem solving information independent of the male or female source is severely limited by their dogmatic dependence upon male authority advice (6, 13). Within this framework of problem solving approaches, women in Western society may be viewed as having a closed belief system (i.e., they are high dogmatics) and, as high dogmatics, it might be assumed they would experience difficulty in interpreting new authority beliefs and endorsements that differ from their existing authority beliefs (5, 16, 17, 19, 20).

Thus, on the basis of Rokeach's (19) and Powell's (17) conceptualization of dogmatism and its related implication, the present study hypothesized that the predisposition of women as high dogmatics to accept male authority advice uncritically would significantly facilitate their problem solving behavior when problem solving information received male authority endorsement. Thus, high dogmatic women, it was hypothesized, would more frequently accept choices that received male endorsement. On the other hand, when problem solving information received female authority endorsement,

the high dogmatic women would tend to reject such choices and become significantly more disoriented to the problem solving task. This hypothesis was based on Greenberg and Tannenbaum's (9) findings that when a recipient is given information which runs contrary to his hitherto held beliefs he makes more grammatical errors, takes longer to comprehend and write, and exhibits similar disoriented behavior. Bettinghaus and Preston (3) obtained similar results and a high correlation between this type of disoriented behavior and Rokeach's (19) closed-mindedness and dogmatism.

Conversely, it was hypothesized that low dogmatic women, as compared to the high dogmatic group, would more frequently make choices that received female authority endorsement and would tend to reject choices that received male authority endorsement. The low dogmatic women as compared to high dogmatic women would show much less tendency toward disoriented responses in the problem solving task.

These hypotheses imply that levels of dogmatism interact with the sex of the expert endorsement to influence the choices of Western women in problem solving information that is presented. The assumption is that high dogmatism among women leads to a devaluation of feminine competence and female endorsed beliefs.

Additionally, it was hypothesized that the tendency of the high dogmatic women to accept male authority endorsement readily is associated with a negative attitude towards women in problem solving roles.

One implication that may be drawn from the hypotheses established for this study is that women in Western society by and large are male authority oriented although they may differ in the extent to which they will initially accept or reject male authority beliefs and advice.

B. METHOD

1. Design

The subjects were administered a series of opportunities to solve the Denny Doodlebug problem (19) by recording their answers on a paper and pencil version of the problem adapted from Schultz and DiVesta (20). Performance on these trials was used to compile separate scores for frequency of selecting male endorsed belief choices and female endorsed belief choices.

Subjects in one treatment were informed that a majority of psychological experts recommended the male endorsed beliefs. In the other treatment the subjects were informed that a majority of psychological experts recommended the female endorsed beliefs. In the control condition, both alternatives were

presented, but neither alternative was said to be endorsed by males or females and neither statement was said to be recommended by the psychological experts.

These three conditions were orthogonally crossed with two levels of dogmatism: high dogmatic women and low dogmatic women. Thus, a 2×3 factorial analysis of variance was implied.

2. *Subjects*

For this study, college students were actually the subjects of choice. First, high intellectual ability was required so that devaluations of feminine competence in problem solving could not be attributed to realistic self-assessments. Second, in the college years, the issues of problem solving competency and the competitive achievement of men and women are salient. The subjects were female students taken from four sections of an intermediate course in educational psychology. In order to avoid revealing the focus of the study, male as well as female students were invited to become volunteers and some males were actually permitted to participate in the study. Only data for female subjects are reported here. Ninety female subjects were finally selected from a larger sample of 115 female undergraduate teacher trainees who had been persuaded one month earlier to take Form E of the dogmatism scale (19) as a part of a project related to studying teacher characteristics. Each subject was randomly assigned either to one of the two experimental conditions or the control condition. In each experimental condition only the 15 high and 15 low scorers on the dogmatism scale were used in the analyses ($n = 90$).

The subjects were almost entirely middle-class whites; median age 20.9 years; mothers of 50 of the experimental subjects (71%) were professional women. Approximately two thirds of the experimental subjects were third-year students, and the rest were divided equally between second-year and fourth-year students. Seventy subjects were single women, and 20 were married.

3. *Problem Solving Task and Materials*

The task employed was the Denny Doodlebug problem (19). As the subjects were not allowed to ask any questions or converse with the experimenter during the experiment, the original statement about procedure was expanded considerably, and several sentences were underlined in red for emphasis. In order to ensure that the task instructions were very clear,

the experimental procedure was pretested with a group of nine subjects. Each subject worked in an isolated booth equipped with a 2×2 inch square of plain cardboard which served as the problem board. A hard rubber piece representing the "doodlebug" and another representing the goal or food were placed on the board in a position that corresponded to the problem situation. The north, south, east, and west points were labeled on each side of the board to provide additional orientation.

Joe Doodlebug is a strange sort of imaginary bug that can and cannot do certain things. He has been jumping all over the place getting some exercise when his master places a pile of food three feet directly west of him. As soon as he sees all this food, he stops in his tracks, facing north. He notes that the pile of food is a little larger than himself. After all this exercise, Joe is very hungry and wants to get to the food as quickly as possible. After examining the situation, he says, "I will have to jump four times to get the food."

The problem was stated as follows:

Joe is a smart bug and is dead right in his conclusion.

How can he take four jumps, no more and no less, to reach the food?

The directions to the problem, hints, and time signals employed in the experimental procedures were transmitted from a taperecorder simultaneously to headsets in each of six booths.

4. Procedure

As soon as the subjects were seated in the experimental booth, they received taperecorded instructions about the task. The subjects were informed that their task was to take the doodlebug from his initial position to the food. The subjects were told that in order to help them, the experimenter would give them hints about the moves they could make in order to solve the problem. They would be given alternative hints to pursue, and they would also be told which subjects from earlier experimental sessions had found the information more relevant to the problem.

a. *The problem solving periods.* The 35 minutes allowed to solve the problem were divided into six segments. Each of the first five segments was four minutes long. However, the subjects were allowed up to 15 minutes to solve the problem during the final segment. Once every minute, the subjects were signaled to record their choice of the best answer to the problem on an IBM recording sheet. Each signal represented one trial and within each four-minute segment the subjects attempted five trials resulting in a total

of 25 problem solving trials and 25 choices recorded by each subject. There were no interruptions by signals during the last 15-minute period. Whenever the subject had arrived at what she thought was a correct answer, she signaled one of the experimenters and demonstrated the solution. The experimenter recorded the solution arrived at by the subject and requested the subject to continue working on the problem in order to be quite sure of the correct solution.

b. Presentation of hints. At the beginning of each of the problem solving periods (1 through 5) the subject was given problem-relevant information regarding one of the beliefs necessary to solve the problem. The information was in the form of alternative strategies, each of which was presented as being a preference of male or female subjects who had engaged in the problem solving task in earlier experimental sessions. Unknown to the subjects, the names of male and female subjects which were indicated after each alternative were grouped in a fictitious order to reflect either a predominantly male or predominantly female preference. First names and last names of some real and some fictitious subjects were used in order to make the procedure more plausible. For example, following is a hint given for period 1:

(a) Joe can only move north because he is facing in that direction (a choice found most useful by Marjorie Brooks, Trevor James, Scott Allen, Sarah Miles, Dick Atkins, Alan Wright, Theodore Wolf, Jeff McMaster, Gerald Cummings, Bob Sangster, Donald Webster, Leo Caldwell, Bob Mussen, Steven Wilde, Mary Fielding). *Total = 12 boys and 3 girls.*

(b) Joe can jump sideways and backwards as well as forward (a choice found most useful by Ann Murray, Linda McPherson, Susan Halliday, Joe Gloster, Wendy Truax, Joann Fraser, Daniel Cugar, Lorna McLellan, Jean Severidge, William Carter, Linda McNight, Josephine Calder, Jennifer Lane, Carolyn Oswald, Tom Gould). *Total = 11 girls and 4 boys.*

As illustrated in the above example of the "facing belief," sets of hints were prepared also for each of the "direction belief" (e.g., Joe was moving away *or* moving toward the food when it was placed on the board), and the "movement belief" (e.g., Joe could have taken one jump in a sequence of four *or* Joe could have been on his third jump) (19, p. 173, 232).

Two sets of hints used in the experiment were designed specifically to direct high dogmatic subjects by expert recommendation of male endorsed beliefs and to misdirect them by expert recommendation of female endorsed beliefs.

The male and female endorsed alternatives and recommendations by ex-

perts were presented as part of the tape-recorded instructions, and were also printed on information cards that the subject read while listening to the tape. The cards, as well as printed directions to the problem, were available to the subject throughout the problem.

c. *The experimental manipulation.* The procedure was adopted partly from Schultz and DiVesta (20) and consisted of the recommendation of one of the alternatives by the majority and the other alternative by the minority of problem solving experts. For example, in the *male endorsed belief* condition the subjects were told in the first hint:

About two thirds of the experts who have tackled this problem feel that if the problem solver assumes that Joe can only move north because he is facing in that direction, it helps the problem solver in getting on the right track to solve the problem. The remaining one third of the experts feel that if the problem solver assumes that Joe can jump sideways or backward, it helps solve the problem.

In the *female endorsed belief condition*, the experts' recommendations of the male endorsed and female endorsed beliefs were reversed. The control condition was based on the same set of alternatives but without any recommendation by experts.

The subjects continued to work at the problem till the time ran out for each segment of the task. Whenever the subject thought she had the right answer, she reported it to the experimenter and demonstrated it for him. No verification of the correct answer was given to the subject till the last trial. However, the experimenter maintained a record which showed the number of times the correct answer was obtained by subjects in the various experimental conditions. At the end of the problem solving period, the correct solution was given to all subjects.

At the end of the experiment and after the postexperimental interview (designed to be a check on the experimental manipulation), the subjects were properly debriefed. The true purpose of the study was explained to them, and they were informed of the experimental manipulation employed.

The experiment was administered in two sessions with 45 subjects involved in the problem solving task in each session.

d. *Scoring procedure.* Several scores were computed from the data obtained on each trial: evidence of disoriented responses (violations of the problem directions or general instructions); frequency of the selection of female endorsed beliefs; and frequency of the selection of male endorsed beliefs.

5. *Additional Measures Used To Test Hypotheses*

The Attitude Scale and Personal Data Sheet were administered three days prior to the problem solving task so that the responses would not affect those on the Doodlebug Test nor reveal the true purpose of the task.

a. Attitude scale. Attitude towards the desirability or undesirability of women being in problem solving positions and roles was assessed by a Likert-type scale of 26 items, selected on the basis of pretests with another student group. Items concerned (a) the desirability of giving problem solving training to women; (b) women's ability to attain intellectual excellence in activities of competitive problem solving with men; (c) personal conflicts of women who assume problem solving responsibilities; and (d) the femininity of women who aspire to be in positions of problem solving.

Half of the statements were favorable and half unfavorable. Subjects used a five-point rating scale to indicate degree of agreement with each item.

b. Personal data sheet. Information was obtained about parents' education and present occupation, siblings, and birth order. The most important items concerned maternal employment, number of siblings, the subject's status among siblings, and the presence or absence of father/husband. This approach was based on the assumption that women's attitude towards female competence is influenced by a working mother and the presence or absence of male siblings, or other male influence.

c. Check on the experimental manipulation. In order to assess whether the manipulation of the male endorsed and female endorsed beliefs and their recommendation by experts worked and had the desired effect, an indirect check of the manipulation was included.

At the end of the experiment, but prior to debriefing procedures, the experimenter asked all subjects to respond to a brief structured interview, which contained several questions designed to identify the subjects who were suspicious about the true purpose of the study. These questions required the subject to state (a) what he/she thought was the purpose of the study; (b) what criterion they had used in choosing from the alternative statements presented; and (c) how much difficulty they experienced in the problem solving task.

A simple effect analysis (22) performed on the data indicated that as compared to the control group, the checks on the manipulation were in the expected direction. Without exception the subjects reported that the task was very difficult. About 50% remarked they were not surprised they had

found it to be difficult, since they generally perceived themselves to be inadequate in problem solving tasks such as the one given. As compared to the controls (who were given the alternative beliefs without any reference to male and female endorsements), the experimental subjects indicated that they more frequently tried the alternative which "had been chosen by the boys, since in my house the boys are very good at this kind of activity"; "My sisters and I are hopeless and my brothers laugh at us"; "Men have more experience in this kind of problem task." Such a frank declaration of choice would imply that they were not at all suspicious about the true purpose of the study. The overall findings suggest that subjects from the low dogmatic group expressed more confidence in their ability to tackle similar problems in the future than did high dogmatics. The fact that not a single subject was suspicious about the true purpose of the study in the postexperimental interview, lends additional support to the interpretation that the manipulation was effective. In general, however, it is recognized that checks of this kind are not unequivocal evidence that the manipulation worked.

C. RESULTS

The frequency of female endorsed and male endorsed responses was analyzed via a factorial analysis of variance consisting of two levels of dogmatism (high and low) and three treatment levels (experts' recommendation of male endorsed beliefs; experts' recommendation of female endorsed beliefs; and no recommendation by experts or control). This analysis yielded an F of 3.16 ($df = 2/84$, $p < .05$) for the effect due to treatment and an F of 3.84 ($df = 1/84$, $p < .05$) for the effect related to dogmatism. The interaction of dogmatism \times treatment yielding an F of 3.72 ($df = 2/84$, $p < .05$) was also in the hypothesized direction.

The findings related to the effects of the interaction between dogmatism \times treatment interaction provide support for the present hypothesis. These results imply that the experts' recommendation of male endorsed beliefs facilitated the task of the high dogmatics in making choices from the alternative hints that were offered; and greatly inhibited the task of making choices when the experts' recommendation of female endorsed beliefs was presented to high dogmatics ($t = 1.75$ $df = 84$ $p < .05$ one-tailed). In contrast, the experts' recommendation of the female endorsed beliefs facilitated the task of the low dogmatics in choosing from the alternative hints presented.

Responses that were violations of the rules and represented the subject's failure to approach the problem within the confines of the task rules (i.e., disoriented responses) were also analyzed. The effects due to dogmatism \times treatment interaction yielded an F of 4.00 ($df = 2/84$ $p < .05$). The overall tendency was for the high dogmatic group to make many more disoriented responses. The disorientation scores of the high dogmatic women were significantly higher than those of the low dogmatic women in the experts' recommendation of the *female endorsed belief condition* ($t = 2.75$, $df = 84$ $p < .05$ one-tailed). In contrast, no significant difference was found between the disorientation scores of the low dogmatics in the experts' recommendation of the *male endorsed belief condition* and *female endorsed belief condition* ($t = 1.05$ $df = 84$, $p < .10$ one-tailed).

Of particular interest is the finding that high and low dogmatics in the control condition (where both alternative hints were presented but where neither was endorsed or recommended by experts) did not differ on the measure of disoriented responses ($t = .134$ $df = 84$ $p > .25$). These findings indicate it is the influence of the external source of male and female endorsement of beliefs, and the recommendation by experts of one belief over the other, that tends to make the high dogmatics more disoriented than the low dogmatics. The influence of the external source is not as significant on the low dogmatic women in the experimental group when compared to the control ($t = .127$ $df = 44$ $p > .25$).

Similarly, there was no significant difference between the high and low dogmatics in the control group ($t = .75$, $df = 84$ $p > .10$) in the frequency with which they selected male endorsed beliefs, implying again that it is the influence of the external source composed of the experts' recommendation that makes the high dogmatics choose male endorsed beliefs more frequently than the low dogmatics. These findings indicate the tendency of high dogmatic women to devalue female endorsed beliefs and value more highly male endorsed beliefs.

a. Results of the attitude scale. The mean for the sample on the attitude scale was 62.91. A subject consistently endorsing the neutral position would have received a score of 78 (26 items of five points each). Therefore, the sample as a whole indicated an unfavorable attitude toward women in positions of problem solving. When the means were studied separately for the high dogmatic women and the low dogmatic women, the mean for the low dogmatic group was found to be 85.80, indicating clearly that the low dogmatics did not have negative attitudes towards women in roles of problem solving. On the other hand, the results suggest that it was the high

dogmatics (mean = 55.90) who contributed significantly to the overall negative attitudes of the subjects toward women in roles of problem solving.

b. Relationship between the choices of subjects on the Doodlebug Test and the attitude scale. Individual scores for the Doodlebug Test were arrived at by subtracting the number of female endorsed beliefs selected from the number of male endorsed beliefs selected. These raw discrepancy scores for the high dogmatics and low dogmatics were converted into z prime scores ($50 + 10z$) as were raw scores from the attitude scale. As analyzed by a Pearson product-moment correlation, there was a significant relationship between the two sets of scores ($r = .82$, $df = 44$) for the high dogmatics. This finding was in the predicted direction. Conversely, there was no significant relationship between the two sets of scores ($r = .13$, $df = 44$) for the low dogmatics.

These results provide support for the prejudice hypothesis set for this study. They provide evidence that the high dogmatic women who rejected the female endorsed beliefs in their problem solving efforts, and more frequently accepted male endorsed beliefs, were also the subjects who had negative attitudes towards the problem solving role for women and feminine competence in this respect.

c. Relationship between attitude scale and variables of the personal data sheet. The relationship was also examined between maternal or other female sibling employment to subjects' attitude toward feminine competence in problem solving roles. Of the 90 subjects, 59 were classified as having mothers or sisters who were employed. The mean score for the attitude scale for these subjects was 72.12. For the subjects whose mothers did not work it was 51.25. This difference was significant ($t = 3.00$), implying that the fact that a mother or sister was employed outside the house had a positive effect on the subjects' attitude toward females in problem solving roles. The difference was even more significant between subjects in the high dogmatic group and the low dogmatic group who had mothers and sisters who were employed. Means on the attitude scale were examined separately for 15 subjects selected randomly from the high dogmatic group whose mothers or sisters were employed, and 15 subjects selected randomly from the low dogmatic group whose mothers or sisters were employed. A $t = 3.05$ $p < .01$ was obtained, implying that for the low dogmatic subjects the fact of maternal or female sibling employment had a greater positive effect on their attitude toward females in problem solving roles.

No relationship was found between scores on the attitude scale and the variables of birth order or the number of males in the family.

D. DISCUSSION

The findings related to the effects of interaction between dogmatism \times treatment for the disorientation scores provided support for the present hypothesis. They clearly imply that high dogmatic women, who are assumed to be particularly susceptible to the authority advice of men in problem solving situations, tended to become more disoriented than did low dogmatic women when faced with expert recommendation of female endorsed beliefs. One interpretation here is that the high dogmatics became more disoriented than the low dogmatics when expert sources endorsed and recommended a belief condition different from the one upheld hitherto. If this interpretation is correct, the findings of this study support Bettinghaus and Preston (3) who obtained a high correlation between disoriented behavior and "closed-mindedness" when subjects were given information which attacked their present beliefs. Also, the findings of the present study, which indicate the tendency of high dogmatic women to devalue female endorsement of beliefs and value more highly male endorsement, reflect Western women's uncritical dependence upon male authority advice "merely because of the power it represents" (5).

The significantly larger number of choices of male endorsed beliefs as opposed to female endorsed beliefs suggests the dependency of women generally on an external source such as male authority advice. These findings indirectly support those of Goldberg (6) and have special implications for individuals in Western society which has produced women with these attitudes towards men and their own competence.

The results support the hypothesis that negative attitudes towards females in positions of problem solving are associated with a nonacceptance or lack of trust of female endorsed beliefs. The indications are that most Western women would allow themselves to become disoriented and confused rather than change their stereotyped opinion of the value of female endorsed beliefs. The tendency to stereotype and differentiate between the value of male endorsed and female endorsed beliefs, according to the findings of this study, is even greater among women who are characteristically more dogmatic in their personality. Such a tendency may present psychological barriers in their problem solving competence.

Female employment by members of the family seems to have a substantial influence upon subjects' attitudes towards women in problem solving roles.

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PHYSICAL ATTRACTIVENESS AND ASSERTIVENESS*1 2

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SUMMARY

Two studies were conducted to test the hypothesis that physically attractive American females are more assertive than physically unattractive females. Highly physically attractive and unattractive females were compared with regard to their response to impolite behavior on the part of the experimenter and in regard to the assertiveness dimension of Borgatta's Behavioral Self Rating Form. Physically attractive females were found in both studies to respond more quickly to correct the impoliteness of the experimenter. While there was no difference in the first study between females high as compared to low in physical attractiveness on the Borgatta measure of assertiveness, a trend emerged in the second study with physically attractive females evidencing greater assertiveness than their less physically attractive counterparts.

A. INTRODUCTION

Persons in social situations often evaluate one another as a basis for deciding whether or not future interaction is desirable. Physical attractiveness is a salient characteristic on which these evaluations are based. Research with American subjects has indicated that physically attractive persons after minimal social contact are viewed with more favor than their less physically attractive counterparts (4, 5, 6, 10, 11, 16, 17). Good-looking people, in addition, are stereotyped as possessing more pleasing personalities than those not as attractive as they are (8, 9, 12). Miller (12) found that adults ascribe positive traits more often to physically attractive others and negative traits more often to physically unattractive others than *vice versa*. Dion and Berscheid (8) found that adults perceive physically attractive children as more intelligent, more honest, and less likely to engage in misconduct than physi-

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² Requests for reprints should be sent to the first author at the University of Maryland address shown at the end of this article.

cally unattractive children. Dion and her colleagues (9) also report that by the time children are in nursery school, they show a preference for physically attractive playmates and that they view such children as more socially acceptable and less aggressive than their less attractive peers. To many people there is obviously more to physical attractiveness than "meets the eye."

Several studies indicate that physically attractive individuals are given preferential treatment by others: their wants are more readily acceded to (13), their personal evaluations are more potent (14), others are more socially responsive to them (1), and others work harder to please them (15). These findings, coupled with the results on attraction and stereotyping, suggest that good-looking persons as compared to their less good-looking peers elicit a more positive response from their social environment. A self-fulfilling prophecy may be set in motion and produce in physically attractive and unattractive persons personality characteristics which complement their different social milieus. Physically attractive persons, therefore, may develop a greater sense of gregariousness and assertiveness than physically unattractive persons because of the more favorable responses they receive from others. Accordingly, in this study it was predicted that physically attractive persons as compared to physically unattractive individuals would evidence greater assertiveness in response to impolite treatment by another and that they would score higher on the "assertiveness" dimension of Borgatta's (3) Behavioral Self Rating Form.

B. STUDY I

1. Subjects

Ten unmarried females between the ages of 18 and 22, five very physically attractive and five very unattractive, were selected as subjects. Subjects were recruited for participation in the study by two experimenters—one male, one female—in the following manner: The experimenters visually surveyed female students sitting alone in the campus center and the library at the State University of New York at Albany. A student was selected as a potential subject if both experimenters independently agreed she was very attractive or very unattractive. The judgments were written on 3" × 5" cards and then compared. A girl was deemed to be very attractive or very unattractive if a judge felt that she would be in the top or bottom 20% of the female student body in terms of physical attractiveness. The evaluators agreed on 85% of their judgments.

The judges introduced themselves to a prospective subject as fellow students working on a class project, and asked if she would be willing to com-

plete a short questionnaire. Eighty-five percent of the physically unattractive females and 65% of the physically attractive females agreed to do so. Females who were not single or were either under 18 years or older than 22 years were told that they would not be needed in the study. The experimenters then escorted the subject to a faculty lounge where she took part in the study.

2. Procedure

The subject was met at the faculty lounge by a male experimenter who expressed his appreciation for her participation in the project. He asked the subject to seat herself facing the wall and he then began reading the questionnaire instructions. Just as he finished reading the instructions and was about to hand the subject the questionnaire, he was interrupted by a female confederate who entered the faculty lounge from the far end and called out, "Bill could I talk to you a minute?" The experimenter excused himself and told the subject that he would be back in just a second. Rather than handing the subject the questionnaire and telling her to start, the experimenter walked off with the questionnaire, and set it on a table six feet from where the subject was seated. All subjects were looking in the direction of the experimenter when he placed the questionnaire on the table. The confederate and the experimenter engaged in a conversation while examining a stack of computer print-out. They were too far from the subject for her to overhear the conversation.

The confederate unobtrusively started a stopwatch as soon as the experimenter turned from the subject, and she stopped the watch as soon as the subject either went and got the questionnaire or called the experimenter's attention to the fact that there was no need for her to wait. The latency of responding to the experimenter's impoliteness was interpreted as a measure of assertiveness. If the subject did not make a corrective response within 10 minutes, the experimenter returned to the subject, apologized for keeping her waiting, and gave her the questionnaire to complete.

After completing the questionnaire—the Borgatta (3) Behavioral Self Rating Form³—the subject was thanked for participating in the study.

3. Results

The latency of assertiveness response was analyzed by means of a fixed effects one-way analysis of variance. Physically attractive females were found

³ The items composing the assertiveness dimension of Borgatta's (3) Behavioral Self Rating Form required respondents to indicate their degree of Authoritarianism and talkativeness, as well as their level of activity and assertiveness. The reliability and validity of the assertiveness measure was established by Borgatta with Campbell and Fiske's (7) Multitrait-Multimethod Approach.

to be more assertive than physically unattractive females [$F(1, 8) = 10.01$, $p < .05$; estimated omega square = 47%]. Physically attractive subjects initiated an assertive response after 201.4 seconds (3 minutes, 21.4 seconds) on the average, while physically unattractive subjects averaged 570 seconds (9 minutes, 30 seconds). Physically attractive subjects, however, were no more assertive on the questionnaire measure of assertiveness than were physically unattractive subjects.

C. STUDY II

1. Procedure

The results of the first study were encouraging enough to warrant a replication with a larger sample of subjects. The second study differed from the first in three ways. First, the subjects were recruited, and the study was conducted in the student's living quarters. This procedure resulting in gaining the cooperation of all persons who were approached. Second, the individual who administered the questionnaire was female rather than male. Third, the experimenters were selected on the basis of their belief that the hypothesized relationship between physical attractiveness and assertiveness was false. Since the experimenters in the first study believed the hypothesis to be true, it is possible that the obtained results were due to experimenter effects.

The procedure for the second study in all regards other than those noted above was similar to that employed in the first study.

2. Results

The results of the second study confirm those found in the first study. Females high as compared to low in physical attractiveness evidenced a shorter latency of making an assertive response [$F(1, 18) = 17.14$, $p < .01$; estimated omega square = 45%] and showed a trend toward more assertiveness as measured by Borgatta's (3) Behavioral Self Rating Form [$F(1, 18) = 3.16$, $p < .1$].

The latency data from the two studies were combined and analyzed by means of a fixed effects 2×2 orthogonal analysis of variance design. Physical attractiveness (high and low) and study (I and II) were the two factors. The result of this analysis is summarized in Table 1, which presents the mean latency response data as a function of the level of physical attractiveness and the study. The two main effects are significant at the .01 level. The interaction effect was negligible. The F ratio for the study effect with 1 and 26 degrees of freedom was 17.09. The F ratio with 1 and 26 degrees of freedom for the physical attractiveness effect was 27.54. The interaction F ratio,

TABLE 1
MEAN LATENCY OF ASSERTIVENESS RESPONSE MEASURED IN SECONDS

Study	Low	Physical attractiveness	Mean
		High	
Study I	570.0	201.4	385.7
Study II	267.4	14.0	140.7
Mean	368.3	76.5	

also with 1 and 26 degrees of freedom, was .94. The results of the combined analysis are, of course, consistent with those found in the separate analysis of the two studies. The Behavioral Self Rating of Assertiveness means were in the predicted direction, but not significant at a .05 level [$F(1, 26) = 3.17$].⁴

D. DISCUSSION

The data are consistent with the hypothesized relationship between physical attractiveness and assertiveness. Further studies should be conducted, however, to ascertain the degree to which the latency of response to an impolite behavior can be viewed as an indicant of assertiveness. The finding that the females high as compared to low in physical attractiveness responded more quickly to the impoliteness of the experimenter is noteworthy. The questionnaire data, however, are less convincing. Since the questionnaire was administered after the subjects had waited varying periods of time before responding to the experimenter's behavior, it is possible that the questionnaire responses were more a function of the immediate situation than an indication of relatively enduring personality characteristics. Future studies should separate the measurement of assertiveness as a personality characteristic from the latency of response measure.

This study presents evidence suggesting that the different social responses physically attractive as compared to physically unattractive people receive from the social milieu have consequences for their behavior. Subsequent research should attempt to ascertain whether physically attractive and unattractive persons differ on other characteristics such as introversion-extroversion, self-esteem, machiavellianism (2), and self-descriptions.

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⁴ The subjects in Study I were significantly less assertive than the subjects in Study II. This could be due to a number of factors including the different sex of the experimenters, the student population at the two universities, or the physical setting of the experiments.

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VIETNAM WAR SOLDIERS AND THE EXPERIENCE OF NORMLESSNESS*

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SUMMARY

The primary purpose of this investigation was to determine the contributions to anomy of selected psychological and sociological variables among a sample of Vietnam War soldiers. Theoretical and conceptual foundations of this study were found in the literature dealing with (a) feelings of normlessness and deregulation, (b) closed-mindedness, (c) communications systems and double-bind messages, (d) stress experience generally, and also the stress of combat, and (e) sociological factors of race and socioeconomic status.

The principal finding of this study was that, in the Vietnam War soldiers studied, dogmatism made significant contribution to the experience of anomy; socioeconomic status and race significantly but minimally increased the efficiency of dogmatism as a predictor of anomy; but neither mode of response to double-bind messages nor stress condition (combat *versus* noncombat experience) made significant contribution to anomy.

Results were interpreted with regard not only to the theories of societal anomie, personal anomy, and dogmatism, but also to the conceptual interrelatedness of anomy and dogmatism. This interrelatedness was also discussed with specific reference to the dogmatic Vietnam War soldiers of this study.

Finally, it was observed that the mean score on anomy of 18- to 26-year-old Ss in this sample was not significantly different from the mean score on anomy of a comparable nonveteran sample of 1972; and an explication of what appears to be relatively modest scores on anomy for the Ss of this study was offered in terms of anomie theory.

A. INTRODUCTION

In theory and research, anomie, considered as a societal condition of normlessness and deregulation, has been related to sudden change, when previously imposed limits on aspirations and behavior disappear and dissatisfactions multiply (7); to a crisis in leadership and a conflict in belief systems (6); and to a disjunction between goals and means that most frequently occurs in

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the lower classes (12). On the level of the individual, the experience of normlessness has been viewed in the main as an interactive effect between the societal condition and the person. The term *anomy*, employed in this study, has been used to describe the experience of normlessness when individual feelings are emphasized (5, 11).

The Vietnam War has generated national strains which may be considered anomic—of conflict and dissent about our involvement in the war; of doubt about the style and quality of our leadership; of questions concerning the behavior and tactics of our troops; and of challenges to the basic processes of government itself. These anomic strains may well have created a unique sense of normlessness in the individual Vietnam War soldier, an experience of anomy differentially determined by personality, social background, and situational factors.

The personality factor of dogmatism or "reliance on absolute authority" (15, p. 60) has in numerous studies (14, 18, 19) been related to the experience of normlessness. Thus, since the very authority of the Vietnam War soldier's authority figures has been challenged (10, 17, 20), his personal experience of anomy may have been determined in part by his degree of dogmatism.

Furthermore, the Vietnam War soldier has been asked to serve in a war about which his country has been ambivalent, and he has been described as "on his way to becoming the nation's first forgotten veteran" (1, p. 32). Therefore, he may well have been exposed to a double message—of demanding and also rejecting his participation in the Vietnam War. Thus, feelings of anomy generated in him may also have been mediated in part by his individual response mode to double-bind messages.

In addition, culture shock has been linked to anomic anxiety; and combat stress, to a sense of disorientation and normlessness (8). The Vietnam War combat soldier has been exposed to both guerilla warfare and a native population characterized as totally antithetical to his own (4). Thus, the impact of the Vietnam War may have been different, and have differentially determined feelings of anomy, for Vietnam War soldiers who served in the combat area of Vietnam than for those who did not. Finally, background factors, such as race and socioeconomic status, have been linked to anomy and may also have determined the individual soldier's experience of normlessness.

The present study has been concerned with the experience of anomy in Vietnam War soldiers, and to personality, sociological and situational variables contributory to this experience. Thus, it has investigated the contri-

butions to anomie among a sample of Vietnam War soldiers of dogmatism, response mode to double-bind messages, stress experience, race, and socioeconomic status. Implicit in this investigation was the hypothesis that the experience of anomie would be greater in the Vietnam War soldier Ss than in comparable Ss who had not served in the Vietnam War.

B. METHOD

1. *Sample*

Army enlisted servicemen in Project Transition, Fort Dix, New Jersey, who volunteered to participate were the subjects of this study. They were all within six months of discharge from service. The sample was comprised of 151 soldiers, of whom 79% were white and 21% were nonwhite. These subjects were predominantly young, over four-fifths of them being under 30. Most of the subjects came from the lower socioeconomic classes, three-fourths being in either Level 5 or 6 on the Revised Occupational Scale for Rating Socioeconomic Status (9). Fifty-one percent of the subjects had served in Vietnam and were considered the "combat" subjects of this study.

2. *Measuring Instruments*

The McClosky-Schaar Anomie Scale was constructed to measure feelings of deregulation and normlessness that are a psychological response to both internal and societal based factors. This individual experience of anomie is described as a feeling that both "the world and oneself are adrift, wandering, lacking clear rules and stable moorings" (11, p. 19).

The second measure, the D Scale, was developed by Rokeach to measure individual differences in the openness-closedness of belief systems. A high score on the D Scale indicates closed-mindedness and signifies rigidity of belief systems and excessive dependence on authority. The D₁₀ Scale, a shortened version of Form E of the D Scale, was used in this study.

The third measure, the Double-Bind Test, "DouBT," was constructed to identify the Ss response mode to the double-bind situation (13). This scale was based on theoretical formulations of Bateson *et al.* (2). A high score on "DouBT" indicates susceptibility to entrapment by double-bind messages. The Revised Occupational Scale for Rating Socioeconomic Status, a revision of the Warner revision of the Edwards Scale, was used to classify Ss by socioeconomic status. It is a seven-point multidimensional scale, using occupation as the major determinant of socioeconomic status; social prestige

and economic position are seen as the chief connections between occupation and socioeconomic status (12).

Stress experience was operationally defined as either combat duty (service in Vietnam) or noncombat duty. High stress experience was represented by service in Vietnam. Race was identified as either white or nonwhite.

3. Procedure

The scales described above were randomly placed in booklets and presented in the summer of 1971 by personnel of Project Transition to the volunteer soldier Ss of this study. Additional information about race, socioeconomic status, and stress experience was gathered from records at Project Transition.

4. Supplementary Data

Comparative data on anomy was gathered with a nonveteran sample aged 18-26 ($N = 50$) at Queensborough Community College, May 4, 1972. This sample of community college nonveterans did not differ significantly by race ($\chi^2 = .02$; $df = 1$; n.s.) and socioeconomic status ($\chi^2 = 1.25$; $df = 2$; n.s.) from those Vietnam War soldiers of this study also aged 18-26 ($N = 126$).

C. RESULTS

A stepwise regression analysis, with anomy the criterion variable, was performed to determine the contributions of dogmatism, response mode to double-bind messages, socioeconomic status, race and stress experience to anomy.

In the multiple correlation of anomy with the independent variables presented in Table 1, anomy related to dogmatism at .42, significant at the .001 level, and socioeconomic status and race contributed significant but minimal increments at the .05 level. Addition of mode of response to double-bind messages and stress experience, however, failed to increase the efficiency of dogmatism as a predictor of anomy.

Furthermore, a t test between means on anomy of the Vietnam War soldier sample of this study aged 18-26 and a nonveteran sample of community college students aged 18-26 was performed. The mean anomy scores of 3.79 for the soldier sample and of 3.74 for the nonveteran sample were almost identical, with a nonsignificant t of .12. Thus, in these samples, the anticipated higher level of anomy among Vietnam War soldiers than among a comparable group of nonveterans was not confirmed.

D. DISCUSSION

The primary purpose of this study was to investigate the contributions to anomy of selected personality, sociological, and situational variables among a sample of Vietnam War soldiers. The dominant finding was that dogmatism made significant contribution to the experience of anomy.

The relationship observed between dogmatism and anomy appears readily interpretable with reference to the dogmatic Vietnam War soldier Ss: Dependent on authority, the dogmatic Vietnam War soldier has had civilian and military authority figures who have frequently seemed unable to assert their power. Intolerant of ambiguity, the dogmatic Vietnam War soldier Ss have served in an indecisive guerilla war where there are, according to Hoopes (10), neither heroes nor villains but only tragedy. Thus, the strain on the rigid belief system of the closed-minded soldier may well account for his feelings of isolation and confusion, of normlessness.

However, major implicit hypotheses—that participation in the Vietnam War, and that combat experience in that war, would contribute to anomy—were not confirmed. These findings also warrant comment.

The finding that combat Ss were neither more nor less anomic than their counterparts not so exposed may relate to the fact that the long-term effects of combat on the Vietnam War soldier have not been assessed. Furthermore, recent reports (3, 16) indicate that Vietnam-stationed veterans are suffering delayed rage and guilt reactions after their return to civilian life.

The finding of no significant difference between the mean score on anomy of 18- to 26-year-olds in the Vietnam War soldier sample and an 18- to 26-year-old nonveteran sample may reflect the greater visibility and demand for attention of the Vietnam War soldier as he has entered civilian life in increasingly large numbers. Furthermore, the Ss of this investigation, who

TABLE 1
STEPWISE REGRESSION ANALYSIS, WITH ANOMY THE CRITERION VARIABLE
(*N* = 151)

Step	Predictor variable	Multiple <i>R</i>	Multiple <i>R</i> ²	Increment	<i>F</i>	<i>df</i>	<i>p</i>
1	Dogmatism	.4216	.1778	.1778	32.21	1,149	.001
2	Socioeconomic status	.4456	.1985	.0208	3.83	2,148	.05
3	Race	.4677	.2188	.0202	3.81	3,147	.05
4	Response mode to double-bind messages	.4789	.2294	.0106	2.01	4,146	n.s.
5	Stress experience	.4827	.2330	.0036	0.68	5,145	n.s.

were not yet discharged from service, may have been "protected" by the mechanical solidarity (6) of the Army from the experience of anomie. Thus, their current bond as soldiers, as well as the clear guidelines of Army life, may have still been operative and acted as a buffer to the sense of neglect and normlessness they would experience in civilian life.

It would be instructive to do a follow-up study in several years to assess the validity of this latter speculation. Such research might profitably take note of both the degree to which institutional supports are utilized by the Vietnam War veteran in civilian life and the relationship between such support and anomic feelings in the veteran, particularly in the dogmatic veteran.

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ROLE PLAYING *VERSUS* DECEPTION: THE ABILITY OF
SUBJECTS TO SIMULATE SELF-REPORT
AND PHYSIOLOGICAL RESPONSES*¹

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SUMMARY

Three groups of subjects were told by an experimenter that they would receive painful electric shocks. Another experimenter told one of these groups to respond honestly, another of these groups to act calm despite the threat, and the third of these groups that they really would not be shocked but to deceive the first experimenter by responding as if they thought they were going to receive shocks and were afraid. A fourth group of subjects was not told about shocks and was asked to respond honestly. Dependent measures were (a) self-report of anxiety, (b) pulse rate, and (c) skin resistance. Results revealed that subjects could accurately role play as measured by self-report but not as measured by heart rate or skin resistance.

A. INTRODUCTION

In response to the ethical (e.g., 1, 2, 8, 13, 18) and methodological (e.g., 10, 11, 14, 15, 16) concerns over the use of deceptions in psychological research, it has been suggested (e.g., 8) that role playing be substituted for deception; that is, the subject would be completely informed of the would-be deception and then would be asked to behave as if he had been deceived. Concerning the possible use of role playing, Brown (3) said, "We believe that a role-playing subject will behave in a way that corresponds more closely to the life situation than a hoodwinked subject will (3, p. 74)." In contrast, however, Freedman (5) asserted,

The data from role playing are people's guesses as to how they could behave if they were in a particular situation; they are not data on how they actually would behave; and people's guesses as to future or hypothetical situations are not the stuff of which a science of human behavior is made (5, p. 114).

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Unfortunately, while the recommendations for the use of role playing persist, the recent review by Miller (9) suggests that there is relatively little adequate data on the correspondence between "real" and "role played" behavior in experimental situations involving deceptions. The data generated in many investigations (e.g., 4, 6, 12) are of limited value because either no direct comparison was made between the performance of role playing and deceived subjects or because the role playing subjects did not actually role play but rather attempted to predict what they would do in a situation which was described to them. These problems were avoided in the experiments of Willis and Willis (19) and Horowitz and Rothschild (7) in which conformity was the dependent variable. The results of both of these experiments indicated that role playing subjects replicated the main effects but not the interactions evidenced by deceived subjects. The point on which all authors seem to agree is that more basic research is needed to identify what types of responses or in what types of situations subjects can adequately role play.

The present experiment was carried out to determine what types of emotion-based responses could and could not be simulated by role-playing subjects. The responses investigated were (a) self-report concerning feelings, (b) pulse rate, and (c) skin resistance. These measures were selected because they are frequently used as dependent variables and because they represent different types of responses used in experiments. The physiological responses were of additional interest because, as well as being frequently used measures themselves, they may provide the basis on which subjects make some nonphysiological responses. That is, physiological responses may provide subjects with cues or distractions which influence other responses (*cf.* 20). This experiment differed from previous work in that rather than having a situation described to them and then being asked to predict how they or others would respond, the subjects actually participated in the experimental situation and were asked to actually make (role play) the responses they thought were appropriate.

In this experiment, two groups of subjects were exposed to a deception (threat of painful electrical shocks) which caused them to become afraid. Subjects in one of these groups (Threat, No Fake) were asked to respond honestly, while those in the other (Threat, Fake Calm) were asked to role play being calm. Subjects in two other groups were not exposed to the deception and therefore were not afraid. Subjects in one of these latter groups (No Threat, No Fake) were asked to respond honestly, while those in the other (No Threat, Fake Fear) were asked to role play being fearful. Examination

of the differences in (a) self-report of fear, (b) pulse rate, and (c) skin resistance across the four groups would indicate which types of responses subjects were able to influence by role playing. If subjects are able to readily play roles other than those justified by the actual situation, it would be expected that those subjects who were actually afraid and those who were role playing being afraid would respond alike but differ from those who were actually calm and those who were role playing being calm and that these latter two groups would respond alike.

B. METHOD

Subjects in this experiment were 47 undergraduate male students at the University of Kansas. Each subject was randomly assigned to one of four conditions; Threat, No Fake ($N = 12$); Threat, Fake Calm ($N = 11$); No Threat, No Fake ($N = 11$); and No Threat, Fake Fear ($N = 13$).

The subjects were seen individually. First a male experimenter explained to the subject that the experiment involved the study of "mood, perception, and some physiological variables." An E & M plethysmographic transducer was then attached to the index finger of the subject's nondominant hand and a pair of E & M lead galvanic skin response (GSR) electrodes were attached to the middle finger of his nondominant hand. The subject was told that these would be used to measure his pulse rate and the electrical conductivity of his skin. Next the experimenter told the subject that he was going to check with the technician who was monitoring a machine (an E & M Physiograph Six) in the next room which was recording the subject's physiological responses and that while he was gone, he wanted the subject to relax. Upon returning to the room after 90 seconds, the experimenter asked the subject to fill out the *Now* form of Zuckerman's (22) Affect Adjective Check List (AACL). On this form the subject checked those adjectives which described how he was feeling at that time. When this was completed, the experimenter told the subject that "before the next part of the experiment, the technician is going to come in and give you some instructions," whereupon he left the room and a female technician came in and gave the subject a set of instructions to read.

The instructions were in the form of a letter on official university stationery signed by a professor of psychology. It was felt that delivering the instructions in this fashion would have more credibility and authority than if the technician gave them orally. In the first paragraph, the importance of the study was emphasized and the subject was told to ask the technician any question he might have. After that point, the instructions differed for subjects

in different conditions. In the Threat, No Fake condition, the subject was told he was going to receive "a series of painful electric shocks" which was expected to make him "somewhat nervous during the experiment," and he was asked "to be as honest and truthful as possible in responding in this experiment." In the Threat, Fake Calm condition, the subject was also told he was going to receive "a series of painful electric shocks," but he was instructed "Although you may be nervous, *we want you to attempt to deceive the experimenter with regard to your real feelings.* We are specifically interested in your making the experimenter believe that *you are not afraid or nervous in the experiment.* In other words, attempt to conceal your real feelings and act as though you were calm."

In the No Threat, No Fake condition, the instructions merely repeated what the subject had been told earlier (i.e., that this was a study of mood, etc.) and requested that the subject "be as honest and truthful as possible in responding in this experiment." In the No Threat, Fake Fear condition, the instructions informed the subject that the experimenter was going to tell him that he was going to receive a series of painful electric shocks during the experiment but "*This is not true. . . no shocks are given in this experiment.*" The subject was further told that the shock electrodes were dummy, that there was no shock machine, and that "there is no reason for you to be afraid or nervous. *However, we want you to attempt to deceive the experimenter with regard to your real feelings.* We are specifically interested in your making the experimenter believe that *you are somewhat afraid or nervous in this experiment.* In other words, act as though you really believed that you were going to get electric shocks."

After the subject had read the instructions and the technician had answered any questions, the technician left the room. The experimenter then returned and began giving the subject general instructions for the remainder of the experiment. In the three conditions involving real or faked fear (i.e., Threat, No Fake; Threat, Fake Calm; No Threat, Fake Fear) the subject was told that he would work on some perceptual tasks and that "at random intervals while you are working on the tasks you will receive one or as many as six shocks The shocks will be administered through these" whereupon the experimenter took out a large set of "shock electrodes" from a drawer. At this point, the subject was given the option of leaving the experiment if he desired, but if he remained, the experimenter attached the electrodes to the subject's nondominant wrist.² When this was completed, the subject was

² Only one subject elected not to continue in the experiment.

asked to fill out a second AACL. In contrast to this, a subject in the No Threat, No Fake condition was told that the purpose of the experiment was to study mood, perception, and physiological responses (no mention of shock was made), and the subject was asked to fill out a second AACL. It is important to note that because the technician had given the instructions which differentiated the four groups in the absence of the experimenter and because the experimenter's general instructions were the same for subjects in the three conditions involving real or faked fear, the experimenter did not know in which of the threat or fake threat conditions a subject was serving. This eliminated the possibility of his introducing bias into these conditions. Since his general instructions for the No Threat, No Fake group were different from those of the other three groups, the experimenter was, of course, aware of the condition in which these subjects were serving.

At the end of the experiment, the subjects in all conditions completed a form which asked about their perceptions of the study. Following this, the subjects were completely debriefed concerning the deception and the nature of the experiment was explained to them.

In summary, the procedures for the experimental session were as follows: (a) initial nonthreatening introduction to experiment by experimenter, (b) first AACL, (c) experimental manipulation of stress and faking through instructions conveyed by technician, (d) general threat or nonthreat instructions by the experimenter, and (e) second AACL. Pulse rate and basal skin resistance were recorded continuously, but the data for the analyses were based on the number of pulse beats and mean skin resistance for the 30-second intervals during which the subject completed the first (premanipulation) and second (postmanipulation) AACL's.

C. RESULTS AND DISCUSSION

Change scores (pre- to post-manipulation) were used in all analyses of the AACL, pulse rate, and skin resistance data. Mean change scores for the four groups and the three variables are presented in Table 1. To determine whether the role playing subjects were able to simulate the responses of the subjects who were not faking and who had been asked to respond honestly, a simple, one-way analysis of variance was performed on the change scores for each of the variables. For each analysis, then, the between groups sum of squares with three degrees of freedom was partitioned into three components, each with one degree of freedom (21). The first component reflects the amount of variance accounted for by the relationship between the means which would

TABLE 1
MEAN CHANGE SCORES (PRE- TO POSTMANIPULATION) FOR AACL,
PULSE RATE, AND SKIN RESISTANCE

Conditions	AACL	Pulse rate	Skin resistance
Threat, No Fake	5.50	2.17	— .145
Threat, Fake Calm	1.82	4.18	— .186
No Threat, No Fake	1.27	— .45	— .033
No Threat, Fake Fear	7.23	1.38	— .066

Note: Pulse rate scores reflect change in number of beats in 30-second intervals, and skin resistance scores reflect change in log resistance in kilohms.

be expected if role playing subjects were successful in simulating responses (i.e., that the Threat, No Fake and No Threat, Fake Fear conditions would be similar to each other and different from the No Threat, No Fake and Threat, Fake Calm conditions). The second component reflects the amount of variance accounted for by the relationship between the means which would be expected if role playing subjects were not successful in simulating responses (i.e., that the Threat, No Fake and Threat, Fake Calm conditions would be similar to each other and different from No Threat, No Fake and No Threat, Fake Fear conditions). The third component reflects the residual variance which was not accounted for by either of the above relationships.

Inspection of the F values associated with the analysis of the AACL measure reveals that the first component accounted for a significant amount of the variance ($F = 14.20$, $df = 1/43$, $p < .001$), while the second and third components did not (1) $F_s = .21$ and 1.06 , respectively, both $df = 1/43$, ns). This finding indicates that subjects who were role playing fear and calm could accurately simulate the subjective self-reports of emotion given by subjects who were actually experiencing fear and calm. More specifically, as the change scores in Table 1 indicate, subjects who were not threatened but who role played being afraid reported as great an increase in fear as did the subjects who were actually threatened; subjects who were threatened but who role played being calm reported only a minimal increase in fear as did the subjects who were not actually threatened. On the other hand, however, inspection of the F values associated with the pulse rate and skin resistance measures reveals that in both cases the second component accounted for a significant amount of the variance ($F_s = 4.71$ and 5.22 , respectively, both $df = 1/43$, $p < .05$), while the first and third components did not (F_s for pulse rate = $.00$ and 1.99 , and F_s for skin resistance = $.01$ and $.35$, all $df = 1/43$, ns). This indicates that the changes in pulse rate and skin resistance of subjects in the fear provoking conditions differed from those of

subjects in the non-fear provoking conditions independent of whether or not the subjects were attempting to respond honestly or to role play some other feeling. As the change scores in Table 1 reveal, subjects who were threatened showed an increase in pulse rate and a decrease in skin resistance regardless of whether or not they were attempting to role play being calm, while subjects who were not threatened showed minimal changes in pulse rate and skin resistance regardless of whether or not they were attempting to role play being afraid.

D. CONCLUSIONS AND IMPLICATIONS

Despite the results found in other studies that subjects can exercise some voluntary control over their pulse rate and skin resistance particularly when such control is made the focus of the subject's task (e.g., 17), it is clear that in the present experiment the role playing subjects did not produce the physiological responses appropriate for their roles even though they were informed that pulse rate and skin resistance were being assessed. It could be argued, of course, that the role playing subjects could have produced the appropriate responses if they had been given additional instructions concerning when and how to influence their physiological responses, additional time to devise methods on their own, or additional motivation. Unfortunately, the additional instructions, motivation, etc., would introduce other differences between role playing and non-role playing subjects, differences which might have effects beyond those intended. That is, introducing factors into the experiment to facilitate the role playing of physiological responses might have unexpected influences on such variables as attention, set, or bodily processes, and these could lead to additional differences between the responses of role playing and non-role playing subjects. The possibility of such differences could greatly reduce the value of data obtained from role playing subjects.

The present results draw into serious question the use of role playing as a substitute for deception in many types of experiments. This restriction would probably apply to experiments in which subjects' responses may be based to some degree on emotional-physiological arousal and the restriction would certainly apply to those experiments in which physiological measures are relied upon as dependent variables.

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CHILDREN'S PREPAREDNESS TO LEARN HIGH MAGNITUDE RESPONSES*¹

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SUMMARY

Debate has raged among psychologists about whether aggression in man is learned or innate. Following Seligman's suggestion, the authors hypothesized that man may be biologically prepared to learn aggressive responses. In Study I, seven sets of twins were frustrated and verbally attacked before the learning trials. The twins were run in a matched subject design with one twin reinforced for punching a Bobo clown hard and the other twin for punching it lightly. Supporting the hypothesis, children learned the high magnitude response in fewer trials and with fewer reinforcements than their twin assigned to the low magnitude condition. In Study II seven additional sets of twins were placed in the same learning paradigm but were not attacked or frustrated. The twins in the high magnitude condition learned the correct response in fewer total trials, and the data on the number of reinforced trials were of borderline significance in the predicted direction. Future research was suggested to discover whether the preparedness to learn uncovered in these two studies derived from innate biological sources, previous learning sets, or response discriminability.

A. INTRODUCTION

Is aggressive behavior in man innate or learned? Students of human behavior have argued convincingly on both sides of this debate. For example, Lorenz (7) and Ardrey (1) argue from evolutionary and ethological evidence that man possesses an aggressive instinct. Those who argue that aggression is essentially a learned response are represented by Bandura (2) and Kaufmann (6), among others. These authors point to the great vari-

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² Request for reprints should be sent to the first author at the address shown at the end of this article.

ability in the amount of aggressiveness between cultures, among individuals, and across situations.

So far the debate about whether aggression is learned or inborn shows few signs of resolution. Seligman and Hager (8) point out that the distinction between learning and instinct is essentially a false dichotomy. They argue that organisms may be biologically prepared, unprepared, or contra-prepared to learn a response. From this standpoint, one sees instinctive and learned behavior lying at opposite ends of a continuum, varying in the quantity of "input" (number of trials, bits of information, and so on) required for the organism to learn the response. Between these two extremes, there is a continuum of preparedness. The concept of preparedness is important, both because it is receiving empirical support in learning studies done with nonhumans and because it promises to integrate the heretofore troublesome instinct-learning dichotomy. This approach helps explain why a given behavior may be very widespread, yet not universal, in a species. Thus far the concept of preparedness has received little research attention with human subjects.

Aggressive behavior in human beings may be behavior of the prepared type. Cross-cultural studies and learning experiments demonstrate that aggression is not universal in man (3), that aggression is a response that can be learned (2), and that responses besides aggression can be learned in response to attack or frustration which are frequent antecedents of aggression (5). However the widespread incidence of human aggression indicates that it is a response that is very frequently learned. A plausible explanation of this ubiquity is that for human beings aggressive responses lie at the prepared end of the continuum.

In Study I the authors examined children's preparedness to learn high magnitude responses when they were frustrated and attacked. The use of high magnitude responses as aggressive behavior is derived from Bandura and Walters' (3) argument that aggression is a social-evaluative category which relies heavily on the magnitude of the response. Walters and Brown (10) have shown that a high magnitude response learned on an apparatus will generalize to "aggression" in an interpersonal situation.

It was hypothesized that the children who had been frustrated and attacked prior to the learning trials would learn the response faster in the high magnitude condition, for both total number of trials and number of reinforced trials, than those twins assigned to the low magnitude condition.

B. STUDY I

1. Method

a. Subjects. Eight sets of identical twins, ages four through six ($\bar{X} = 4.5$ years) were recruited through Seattle area Mother of Twins Clubs. Although singletons could have been used, twins were tested in order to obtain closely matched random samples and because twins were readily available in the appropriate age group. The twins came from middle socioeconomic level homes and all lived in the metropolitan area of Seattle. The children were all of Euro-American descent. One member of each twin pair was randomly assigned to the high magnitude response condition and the other member of the twin pair was assigned to the low magnitude response condition.

b. Procedure. The children were tested individually in their own homes in a room secluded from the rest of the family. A Bobo clown served as the punching device. The four foot high clown was hinged on the bottom to a base so that it could move from a 90° angle back about 18 inches when hit. His chest was padded to provide a punching area. The clown was attached to a spring which provided tension when he was hit. The spring tension was initially set according to predetermined settings based on the child's weight. The total distance of deflection backwards served as a measure of the hit's force (0 was no movement and 20 was maximum deflection). The clown locked at the furthest point back on each hit so that magnitude of the hit could be determined while the clown was not moving.

The primary experimenter (female) established rapport with the children and then had them hit the clown several times to get the feel of how hard one had to push to move the clown. After that, the experimenter asked the child to hit the clown two times "hard," two times "medium," and two times "soft." The order of these hits was counterbalanced for different children. These hits established an individual base-rate for each child, and reinforcement was contingent on this baseline assessment. Children in the low magnitude condition were reinforced during the experimental period for hitting intensities equaling or less than the lightest hit during the base-rate. The twin in the high magnitude condition was reinforced during the learning trials for hits equal or harder in intensity than the hardest punch during the base-rate. By creating an individualized criterion for reinforcement, the importance of prior learning was diminished. For example, if a child had learned to be a "slugger" in the past, his baseline intensity would

have probably been high, and therefore, to be reinforced in the high magnitude condition, such a child would have had to hit hard relative to his own base-rate. If a child was a light hitter, he would not have to hit very hard in the high magnitude condition, but would have had to hit very lightly in the low magnitude condition. A biased outcome because of a tendency for many children in this study, as a result of environmental uniformities, to have learned to hit in a certain way was thereby eliminated. Although a Bobo clown may have been considered a punching device by some of the children, this fact should not have biased the outcome of the study, since each child's approach to the clown was taken into account by use of the baseline for determining the reinforcement contingency.

Next, the experimenter took the child to look at a suitcase filled with prizes, and the child was told that he could win the prize of his choice. To win the prize the child had to answer the question: "What is six divided into 13?" Pretesting revealed that children appeared upset after being asked this question. The difficulty of the question made it immediately obvious to the child that he was not going to win the prize. When the child could not answer the question, the experimenter said he could not have the prize, but then added, "Wait, I'll ask Bobo and if he says 'yes' you can have the prize anyway." She then pretended to whisper to the clown and then turned to the child and said, "Bobo says you can't have the prize because you're a dummy." She then quickly added that perhaps the child could win the prize another way, by hitting the clown right. The alternate way to win the prize was presented immediately in order to avoid undue upset at being denied a prize. Only after it was ascertained that quickly moving to the hitting phase of the study, with the attendant possibility of winning a prize, successfully eliminated signs of upset, did the experimenters feel justified in using this procedure.

The experimenter explained that when the clown was hit correctly, she would put a marble into a dish located next to the child and say, "Right!" When the child had accumulated "enough marbles" he could win a prize. The exact details were repeated so that they would be clear to the child. The child was told that he could either punch the clown or give it a push with his open hand. The experimenter stated that on those punches which were not right, she would say nothing and he should go ahead and hit the clown again. The experimenter's words were standardized and her behavior was kept as constant as possible across all conditions.

The second experimenter recorded the intensity of the hits and informed

the primary experimenter when the child had reached criterion. When this occurred, the child was informed that he now had enough marbles and that he could choose a prize. After this happy event, the experimenter explained to the child that the clown, of course, could not really talk, that Bobo had not said the child was a dummy, and that it would not have been nice to call anybody a dummy. The children were typically eager to go off and play with the prize and none appeared to be upset.

Learning of the correct response was defined as five consecutive "right" hits. Since children became tired and discouraged if they did not win the prize, the second experimenter gave a graded series of standardized "hints" starting on trial 50 and added more specific hints after each additional 10 trials. This was to eliminate the possibility that a child would become overly upset. If the child appeared too tired or frustrated after 100 trials he was given a prize even if he had not yet learned the correct response.

2. Results

A total of eight sets of twins participated in the study, but the data for one set of twins were excluded from the data analyses because the correct response was not learned by the twin in the low magnitude condition. This *post hoc* dropping of one twin set from the data analyses operated against the hypothesis, since the twin with the smaller number of trials who had successfully learned the correct response was in the high magnitude condition. One other twin had to receive the graded series of hints and again, this child was in the low magnitude condition. The data for this twin set were retained in the analyses; the hints in the low magnitude condition also worked against significant differences between groups because they aided the child in the low magnitude condition and therefore attenuated the real differences between groups. There were four female sets and three male sets of twins in the final group of subjects. Only one mother reported that her twins had previous experience with a punching clown.

The data for the mean number of trials to criterion can be seen in Table 1. These data are indicators of the number of trials it took a child to learn a response which was dependent upon his base-rate and therefore reflected the child's preparedness to learn a particular response independently of whether he was a light or hard hitter. There were no significant differences between males and females in the magnitude of their baseline responses, perhaps because the apparatus was adjusted according to the child's weight. Nor was there a significant difference between males and females for the

TABLE 1
MEAN NUMBER OF TRIALS TO CRITERION FOR THE FRUSTRATION/ATTACK
GROUP (STUDY I) AND THE NONFRUSTRATION GROUP (STUDY II)

Trials to criterion	Response magnitude rewarded	
	High	Low
<i>Frustration/attack group (Study I)</i>		
Total	10.00	46.43
Reinforced	6.71	13.14
<i>Nonfrustration group (Study II)</i>		
Total	19.14	101.85
Reinforced	11.86	20.43

Note: $n = 7$ for each condition.

learning indices. A t test revealed a significant difference between high and low magnitude groups ($t = 2.37$, $df = 12$, $p < .025$) for the total number of trials to criterion and also a significant difference for the number of reinforced trials to criterion ($t = 2.83$, $df = 12$, $p < .01$). Number of reinforced trials to criterion is perhaps a more sensitive indicator of preparedness because this figure represents only those trials on which the child responded correctly. Rewarded trials to criterion seem to reflect how ready an organism is to learn a particular response via response contingencies.

C. STUDY II

The results of Study I clearly indicate that the high magnitude response was easier to learn than the low magnitude response. The twins in the high magnitude condition learned the response in fewer total trials and with fewer significant reinforcements. These significant differences were obtained *despite* the fact that one twin set was dropped because the low magnitude twin never learned the response, and another low magnitude condition twin learned the response with the help of hints. The children used in this study were prepared to learn a high magnitude response following attack and frustration. The question arises whether the attack and frustration were critical determinants of this preparedness, or whether children unprovoked by these antecedents are also prepared to learn high magnitude responses faster than those of low magnitude. Study II was designed to assess whether the preparedness to learn high magnitude responses manifested in Study I is a general phenomenon or occurs only after a child has been frustrated or attacked.

1. Method

a. Subjects. Ten sets of fraternal twins were obtained through Seattle area Mother of Twins Clubs, since the supply of identical twins was exhausted. The children fell roughly within the same age and socioeconomic boundaries as described in Study I. Their mean age was 4.9 years. Each member of the twin set was randomly assigned either to the high or low magnitude condition.

b. Procedure. The procedures followed were identical to those in Study I except that no frustration or attack was used. The child was asked if he would like to win a prize, and the punching game was explained and implemented. If the child had not learned the response by trial 100, he was asked every 25th trial if he wanted to continue.

2. Results

None of the mothers indicated that their twins had prior experience with a punching clown. Of the 10 sets of twins used, three sets were dropped from the analyses because of inability to learn the correct response. In one of these sets neither twin learned the correct response, and in the other two sets the child in the low magnitude condition failed to reach the learning criterion. Dropping these twin sets again provided a much more conservative test of the hypothesis than retaining these sets of twins in which the child in the low magnitude group in all cases failed entirely to learn the response. In addition, the fact that children failed to learn the correct response made the data for these subjects difficult or impossible to compare with the data of children who had learned the correct response.

Of the seven remaining sets, four were cross-sexed pairs. There were four females in the high magnitude condition and three females in the low magnitude condition. There were no significant sex differences in baseline hitting or in the two measures of learning. Four of the children retained in the data analyses received the graded series of hints and all of these were in the low magnitude condition.

The data for mean number of trials to criterion may be seen in Table 1. The difference between the high and low magnitude conditions was significant for total trials to criterion ($t = 3.65$, $df = 12$, $p < .005$) and approached significance for rewarded trials to criterion ($t = 1.38$, $df = 12$, $p < .10$). The differences between the two learning conditions were undoubtedly much larger than the data indicate. Three children in the low

magnitude condition failed to learn the response and four of the seven who did learn the response in this condition were able to do so only with help not provided children in the high magnitude condition. Fisher's Exact Probability Test (9) revealed that out of the total group of twins, significantly more in the high magnitude condition learned the correct response unaided than did children in the low magnitude condition ($p < .01$).

D. DISCUSSION

The results of Study I and Study II reveal that the children were prepared to learn a high magnitude response in the experimental situation under both attack/frustration conditions and when attack was absent. In fact, the great difficulty encountered by children in learning to repeat a low magnitude hit after such a response had just been reinforced was surprising. The results of both studies indicate strongly that children learned the high magnitude response with fewer total trials. The data for rewarded trials to criterion indicate faster learning for the high magnitude group under frustration/attack but are only suggestive for the nonfrustrated group. The large number of twins who did not learn the low magnitude response or learned the response only with hints, reveals that the children were relatively unprepared, perhaps contraprepared, to learn the low magnitude response. The reason that the children in the attack/frustration condition learned the response quicker than their counterparts in Study II may be due to the attack procedures, but since subjects were not randomly assigned to Studies I and II, no firm conclusions can be drawn at this time about the genesis of the difference in learning.

As clear as the findings suggesting preparedness are, they nevertheless raise many questions. The most important question is *why*? Were the children prepared to learn the high magnitude response because of biological preparedness (8), because of previous learning which led to a "learning set" for this situation, or because high magnitude responses are more easily discriminable for children? The data indicate that children were prepared to learn high magnitude responses and unprepared to learn low magnitude responses, but the origin of this preparedness could be either in the inborn biology of the children or in previous experiences. The differences in learning cannot easily be attributed to different capabilities for making the hard and easy response (e.g., the possibility that the easy response required fine motor coordination the children did not possess), since the response required of each child was determined by the child's own base-rate.

Independently of the origins of the preparedness discovered in this research, such findings are important in themselves. It is of practical interest to know that our children at an early age can easily learn a high magnitude response but, at least in some situations, can learn a low magnitude response only with great effort and many contingent reinforcements.

Certainly other studies are needed that include other ages of children and other primates. Also varying situational parameters, such as the antecedent conditions and the type of response required, will be very important before the origins of such preparedness can be ascertained. If the phenomenon holds great generality over various age groups including young children, generality across primate species, and across various learning situations and responses, one would begin to suspect biological preparedness. Such preparedness of learning has been well documented in nonprimate mammals (4, 8). The present findings clearly indicate preparedness to learn high magnitude hits, and the question of the generality of these findings deserves research attention.

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THE EFFECTS OF HARM-DOING ON INTERPERSONAL ATTRACTION*¹

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SUMMARY

In a 2×2 factorial experiment, subjects were induced to like or dislike a confederate who then delivered shocks to them either one or five times out of five opportunities. Subjects were then permitted five opportunities to return shocks. Subjects reciprocated shocks according to the amount they had previously received. Changes in attraction from pre- to postinteraction were found to be due to both the initial inducement and the frequency of shocks received. High attraction subjects decreased their liking for the confederate as a direct function of the amount of shocks he mediated. Low attraction subjects increased their liking for the confederate, the fewer the shocks they received. The results were discussed in terms of expectancies and the resultant changes that occur when they are violated.

A. INTRODUCTION

The current research on the primacy effects of adjectival descriptions on summary evaluative judgments (1) and the recency effects on liking for an evaluator who presents first negative and then positive judgments about subjects (2) suggest that expectancies may be implicated in the development or change of liking for another person. Tedeschi (16) has proposed that the expectancies involved with attraction may serve as a basis for disappointment or pleasant surprise and the subsequent revision of liking for the stimulus person.

Positive attraction produces an expectancy for positive outcomes from interaction. If this expectation exceeds the actual gains, the person will decrease his liking for the other; while if the gains merely meet expectations, the benefactor will neither lose nor gain in attraction. Similarly, disattraction

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produces a low expectancy for positive outcomes. If the low expectancy is met by little rewards, no revision in liking will occur; but if more is gained than was expected, the recipient will increase his liking for the benefactor (16). Thus, as Blau (5) noted, the growth of the intensity of liking between two persons depends upon benign escalation cycles in which each participant overpays the other in a series of reciprocal exchanges.

In a test of this expectancy theory, Stapleton, Nacci, and Tedeschi (15) induced positive or negative attraction for a confederate who then rewarded subjects one, five, or nine times out of 10 opportunities. The changes in liking for the confederate that occurred from pre- to postinteraction were highly supportive of the expectancy theory of attraction. When the high attraction confederate provided many rewards, liking for him remained at the preinteraction level; but as the number of reinforcements decreased, liking for the confederate also declined. On the other hand, when the low attraction confederate provided only one reward to subjects, liking for him remained at the preinteraction level; but liking for this confederate increased as the number of reinforcements given by him increased. This interaction of the initial attitudes toward the confederate and the number of rewards he mediated on the subjects' liking for him is contrary to predictions derived from reinforcement theories of attraction.

Reinforcement theories of interpersonal attraction presume that liking for a stimulus person is a positive monotonic function of the number and magnitude of rewards mediated by, or associated with, him (8, 12, 13). Furthermore, reinforcement theory must assume that disliking is a function of the number of punishments administered by (and/or associated with) the relevant person.

However, expectancy theory would predict that changes in attraction should also be a function of disconfirmed expectancies with regard to punishments. Presumably, in a potentially harmful situation, high attraction would lead a person to expect that the relevant other (potential harm-doer) would not mediate harm; while disattraction might well lead to the expectation of harm. If the liked person administers harm, he should lose some of his attractiveness in the eyes of the victim; but, if the disliked person does not mediate harm, he should gain in attractiveness.

In a study on attraction and aggression, Hendrick and Taylor (11) induced subjects to like or dislike a confederate who then shocked them either at low or at high intensity levels. Retaliation by subjects was found to be proportional to the confederate's attack level. Attraction had no effect on retaliatory behavior. However, manipulation checks for the attraction inductions were

not conducted until after the subjects had interacted with the confederate. Because of this limitation, the effects of the induction and the confederate's behavior could not be clearly separated on the dependent measure of attraction. Thus, no test for changes in attraction from induction to postinteraction could be made.

The present study employed a 2×2 factorial design to investigate changes in liking that may occur in harmful situations. Subjects were induced to like or dislike a potential harm-doer, who subsequently administered either one or five shocks to them out of five opportunities. After subjects were given five chances to return shocks, their impressions of the confederate were obtained. It was predicted that (H_1) high attraction subjects would decrease their liking for the confederate when the latter shocked them five times, but would not change their liking for him when he shocked them only once; (H_2) low attraction subjects would increase their liking for the confederate when he shocked them only once, but would not change their liking for him when he shocked them five times; and (H_3) the failure of Hendrick and Taylor to find attraction effects on retaliatory behavior should also be replicated. That is, subjects, irrespective of their attraction levels, would deliver more shocks to the confederate when they received more from him.

B. METHOD

1. *Subjects and Experimental Personnel*

Forty male undergraduate students enrolled in the introductory psychology courses at the State University of New York at Albany partially fulfilled their course requirement by participation in this study. Ten subjects were randomly assigned (in order of appearance) to each of the four cells of the experiment. Five female and four male undergraduate students, majoring in psychology, served as experimenters and confederates, respectively, and were randomized across conditions.² It was felt that the presence of female experimenters would decrease subjects' trepidation and subsequent refusal to participate in an experiment employing electric shock.

2. *Apparatus*

The apparatus consisted of a set of finger electrodes, a Foringer shock generator (Model No. 1154M11), a pair of white signal lights, and a fully automated contingency timer. One white light and the finger electrodes were

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placed at one end of the experimental table, while the shock generator, a second white light, and the timing equipment were placed at the other end of the table. The subject and confederate were separated by a three foot high wooden partition placed in the center of this table. The timer was preset so that all shock options were of three-second duration, with a 15-second intertrial interval. The shock generator was calibrated to deliver a 15 milliamp shock of .5 second duration when a button on its face was depressed. The shocks, while somewhat unpleasant, were not of a sufficient intensity to be painful to the subjects. Of course, the actual shock level experienced by each subject was a variable function of his momentary resistance level.

3. *Procedure*

Both the subject and a confederate were in the waiting room when the experimenter arrived and asked them to follow her. They were led to individual testing cubicles and asked to complete a Survey of Attitudes (7). This questionnaire asked subjects to express their attitudes about such salient topics as politics, religion, college life, sex, etc. The items were Likert scales and offered the subjects alternatives along a six-point continuum from "strongly against" to "strongly for." Upon completion of the attitude survey, the cover story that the experimenter gave to the subject was that this first part of the study involved the formation of impressions about another person, and was designed to replicate the finding that people can make fairly accurate judgments about another person solely on the basis of knowledge of the other person's attitudes.

The experimenter then took the subject's attitude survey and left the room, ostensibly for the purpose of exchanging it for the survey of the "other person." The confederate's survey was falsified so that all of the attitudes were either very similar to or dissimilar from those expressed by the subject. In the high attraction conditions, the confederate's survey was falsified to express all attitudes one place more extreme and in the same direction as the subject's original attitudes. If the subject had answered any of the statements with the most extreme preference, the attitude one place removed from that preference was checked. In the low attraction conditions, items were falsified so that the confederate expressed attitudes three places in the opposite direction from the subject's preferences.

The fake Survey of Attitudes was brought to the subject and he was asked to examine it carefully and then complete an Interpersonal Judgment Scale [IJS (7)]. Subjects were told that their ratings would be confidential and

would not be shown to the other person. Two critical items embedded in the IJS asked the subject to rate, on a seven-point scale, how much he liked the other person and how much he would enjoy working with the other person in an experiment. The summed scores of these two items provided the dependent variable assessment of the attraction inducement. Attraction scores could range from 2 to 14, with a score of 2 indicating the lowest level of attraction and a score of 14 representing the highest level of attraction.

The analysis of variance of these summed scores from the two critical items on the IJS (preinteraction) showed that the attraction inducement was successful in producing the desired differences ($F = 49.74$, $df = 1/36$, $p < .001$). Subjects in the high attraction conditions liked the confederate more ($\bar{X} = 10.95$) than did subjects in the low attraction conditions ($\bar{X} = 7.35$).

After completion of the attraction induction, the experimenter took the subject and the confederate to the door of the experimental room containing the shock apparatus, and told them that this was the beginning of the final phase of the study. Before entering the room, she informed them that the experiment involved electric shock and that they could withdraw from the study, receiving experimental credit only for the time already spent in the laboratory. All subjects agreed to continue. They were then informed that there were two roles—operator, who administered the shocks, and estimator, who estimated the probability of receiving shocks—and that they would be given the chance to perform each role. A sham drawing was held to determine each person's initial role, and the confederate always emerged as the operator with the subject as the estimator.

The subject and confederate were seated at appropriate ends of the experimental table, and the subject was given a page of printed instructions explaining his task in the experiment. These instructions indicated that whenever the white light in front of him illuminated, the operator had the option of delivering a shock to the estimator's finger tips. The instructions stated that whether or not the shock was actually administered was entirely up to the operator. A white light on each side of the table would come on every 15 seconds and remain on for three seconds. During each 15-second interval prior to illumination of the light, the subject was told to estimate the probability with which he thought a shock would actually be delivered on the next shock-option trial. The subject was asked to make his estimations in whole percentages between 0%—indicating that he felt there was no chance at all of receiving a shock on the next trial—and 100%—indicating that he felt certain he would be shocked on the next trial. The bottom of the instruc-

tion sheet contained five spaces, corresponding to five illuminations of the light, on which the subject was to record his probability estimations.

The experimenter also verbally instructed both the subject and the confederate. The confederate's task was said to involve a decision of whether or not to administer a shock to the subject on any particular trial, a decision which was entirely his. Thus, the confederate's choice was either to press or not press the shock delivery button when the light illuminated. When the experimenter was satisfied that the subject understood both his and the confederate's task, she attached electrodes to the subject's fingertips, requested that there be no further talking, said "begin," and asked the subject to make his first estimation. She then left the experimental room to monitor events from a control room equipped with a one-way mirror.

For the first five trials, the confederate, as operator, actually administered shocks according to one of two frequency schedules: (a) on only the second shock-option trial; or (b) on all five of the trials. Following the fifth shock-option trial in all conditions, the experimenter re-entered the room and asked the participants to change positions physically (i.e., the subject became the operator, and the confederate became the estimator). The experimenter then reinstructed both, now giving the subject the operator's instructions and the confederate the estimator's. Also, the subject was requested to record any shocks he delivered to the confederate-estimator, as well as the trial on which they were given. It was emphasized to the subject that he could choose to shock or not shock the "other subject" on each trial as he wished. As a check on the subject's recording accuracy, the confederate also maintained a record of the shocks received during the reciprocity trials. Five more trials were then run in all conditions.

Following the experimental trials, the subject was removed to an individual testing cubicle where the experimenter said to him: "Since you have just interacted with this other subject, I would like you to give me your impressions of him, now." The subject was then administered the IJS for the second time. The two critical items on this second form were summed and used to assess the changes in attraction that were hypothesized. The subject was also given an abbreviated form of the Semantic Differential (14) which contained separate indential pages for the "other person" and "self" ratings. On each page, the Semantic Differential contained 12 pairs of polar adjectives grouped along three dimensions. The evaluative dimension contained the polar adjectives good-bad, kind-cruel, honest-dishonest, and beneficial-harmful. The activity dimension contained the adjectives active-passive, progressive-regres-

sive, changeable-stable, and excitable-calm. The potency dimension contained the polar adjectives hard-soft, strong-weak, severe-lenient, and rash-cautious. Each item was scored from +3 to -3, and the four items for each semantic dimension were summed to yield an overall score. Another pair of polar adjectives, not fitting any of the above dimensions, was included on the Semantic Differential: aggressive-nonaggressive.

Following the completion of these postinteraction questionnaires, the subject was debriefed, and an effort was made by the experimenter to assure that no subject left the laboratory feeling anxious as a consequence of receiving electric shock. Full disclosure with regard to the deceptions was not provided until the end of the semester, when their nature, necessity, and purpose were revealed to the entire introductory class, along with the design and findings of the experiment.

C. RESULTS

1. *Attraction Scores*

The analysis of variance of the attraction scores obtained from the second administration of the Interpersonal Judgment Scale yielded main effects on both the attitude similarity-dissimilarity induction ($F = 7.725$, $df = 1/36$, $p < .01$) and the frequency of shocks mediated by the confederate ($F = 6.912$, $df = 1/36$, $p < .015$). Subjects in the similarity conditions liked the confederate more ($\bar{X} = 10.15$) than did subjects in the dissimilarity conditions ($\bar{X} = 8.30$). Subjects who received only one shock liked the confederate more ($\bar{X} = 10.10$) than subjects who received five shocks ($\bar{X} = 8.35$). The interaction term was not significant ($F < 1.00$).

In order to assess the change in liking from induction to postinteraction, a difference score was obtained for each subject. The difference measure was derived by subtracting the preinteraction IJS score from the postinteraction IJS score for each subject.³ These scores were submitted to a 2×2 analysis of variance. Both attitude similarity-dissimilarity ($F = 14.009$, $df = 1/36$, $p < .001$) and frequency of harm received ($F = 25.262$, $df = 1/36$, $p < .001$) produced significant effects; but, the interaction term was not significant ($F < 1.00$). The induced attraction effect indicated a negative shift ($\bar{X} = -.80$) for high attraction subjects, and a positive shift ($\bar{X} = +.95$) for low attraction subjects. The results for frequency of harm received showed

³ The difference scores were calculated in this manner to reflect more accurately the direction of change in liking (if any): An increase in liking from pre- to postinteraction would be represented as a positive score; and, a decrease in liking would be shown as a negative score, while no change would be indicated as a zero value.

that subjects who were shocked only once increased their liking for the confederate ($\bar{X} = +1.25$), while subjects who were shocked five times decreased their liking for him ($\bar{X} = -1.10$).⁴

Perhaps more interesting than the main effects is the breakdown of all four cell means of the study to examine the hypothesized effects of expectancies and actual shocks received on changes in attraction. The high attraction-five shocks and low attraction-one shock group means were submitted to simple t tests, in order to assess if the obtained changes were significantly different from no-change (i.e., a zero difference score). The results supported the predictions. In confirmation of the first hypothesis ($t = -3.612$, $df = 9$, $p < .001$): when high attraction subjects received five shocks, they significantly lowered their liking for the confederate ($\bar{X} = -1.90$). Similarly, in support of the second hypothesis ($t = +4.279$, $df = 9$, $p < .001$): when low attraction subjects received only one shock, they significantly increased their liking for the confederate ($\bar{X} = +2.20$). To test for differences among all four cell means, Duncan Range Tests were performed. These tests indicated that subjects in the high attraction-five shocks condition ($\bar{X} = -1.90$) were significantly different from all other conditions ($R_2 = 1.6$, $R_3 = 2.2$, $R_4 = 4.1$; all $ps < .01$), as were the subjects in the low attraction-one shock condition ($\bar{X} = +2.20$; $R_2 = 1.9$, $R_3 = 2.5$, $R_4 = 4.1$; all $ps < .01$). The remaining two conditions (high attraction-one shock, $\bar{X} = +.30$, and low attraction-five shocks, $\bar{X} = -.30$) were not different from each other.

2. Other Interpersonal Impressions

On the ratings obtained after the interaction, main effects of shock frequency were found on the evaluative ($F = 7.539$, $df = 1/36$, $p < .009$) and

⁴ A question may be raised about the authenticity of the attraction change scores, since the preinteraction means may be seen as "ceiling and floor effects." That is, it could be argued that high attraction subjects could neither increase nor low attraction subjects decrease their liking for the other person, since they already were at the top and bottom of the scale. However, this argument does not seem warranted for two reasons. (a) From the range of the IJS scale, it can be seen that the high attraction preinteraction mean ($\bar{X} = 10.95$) was 3.05 units below the top of the scale, while the low attraction preinteraction mean ($\bar{X} = 7.35$) was 5.35 units above the bottom of the scale. This seems to suggest that, theoretically, there was "room" for the scores to move in either direction, respectively. (b) The largest and smallest means reported by Byrne and his associates (9) for the IJS have been a high attraction mean of 13.13, and a low attraction mean of 3.47. These were obtained under conditions where the "other person" had either 1.00 or .00 proportions of similar attitudes as those expressed by the subjects, respectively. On the basis of these data, it may be argued on empirical grounds that, in the present experiment, the high attraction mean could have increased by 2.18 units, and the low attraction mean could have decreased by 3.88 units. From both these lines of reasoning, it is reasonable to conclude, then, that there were no "ceiling or floor effects" in the attraction scores of the present study.

the potency ($F = 43.295$, $df = 1/36$, $p < .001$) dimensions of the Semantic Differential and on the perceived aggressiveness of the confederate ($F = 20.250$, $df = 1/36$, $p < .001$). The subjects who received one shock rated the confederate as evaluatively positive ($\bar{X} = +3.70$), impotent ($\bar{X} = -2.45$), and nonaggressive ($\bar{X} = -.90$); while the subjects who received all five shocks rated the harm-doer as evaluatively neutral to slightly positive ($\bar{X} = +.50$), potent ($\bar{X} = +3.65$), and aggressive ($\bar{X} = +.90$). Only the self-rating of activity was affected by the frequency of shocks received ($F = 6.172$, $df = 1/36$, $p < .02$). Subjects receiving the most harm rated themselves as more active ($\bar{X} = +1.18$) than did subjects receiving the least harm ($\bar{X} = -.92$).

The only effect of attitude similarity-dissimilarity on any of the postinteraction impressions, either by itself or in interaction with shock frequency, was a main effect on the perceived activity of the confederate ($F = 13.163$, $df = 1/36$, $p < .001$). The confederate was perceived as more active when he had similar attitudes ($\bar{X} = +1.40$) than when he had dissimilar attitudes ($\bar{X} = -1.20$).

3. *Reciprocity Behavior*

The frequency of harm received from the confederate produced a main effect on the frequency with which subjects reciprocated shocks ($F = 11.068$, $df = 1/36$, $p < .002$). Subjects who were shocked five times returned more shocks ($\bar{X} = 2.35$) than did subjects who were shocked only once ($\bar{X} = 1.50$). The under- and overpayment effects found in this study were consistent with those reported in a series of other reciprocity studies (3, 4, 10, 17). When the frequency of harm mediated by the confederate was very high, subjects returned less than they received; but, when the frequency of harm was very low, subjects reciprocated more than they had received. Presumably, there was an avoidance by subjects in making extreme responses in these experiments—they acted in such a manner as to be perceived as less extreme in their behaviors than the "other subject."

The effect of the attraction manipulation on reciprocity behavior did not reach conventional levels of significance ($F = 3.102$, $df = 1/36$, $p < .087$). There was a tendency for high attraction subjects to return fewer shocks ($\bar{X} = 1.70$) than low attraction subjects ($\bar{X} = 2.15$).

D. DISCUSSION

The results of the present experiment clearly supported an expectancy theory of interpersonal attraction. The theory assumes that liking is associated

with the expectancy that the referent person will provide rewards and will not mediate harm. Disliking is associated with the expectancy that the referent person will not mediate benefits, but will dole out unprovoked harm. When these expectancies are confirmed, the recipient has no reason to adjust his liking for the referent person. However, when the referent person disconfirms the individual's expectations for rewarding or punishing behaviors, the degree of liking between them will be adjusted. The Stapleton *et al.* (15) study referred to in the introduction provided support for the expectancy theory when rewards were involved. The present experiment extends the support for the theory to the case where harm-doing behaviors are involved. Initial high attraction for the confederate was sustained only when he meted one out of the five possible shocks, but was significantly lowered when the confederate administered all five shocks. Initial low attraction for the confederate was unaffected when he administered all five shocks, but was significantly increased when he mediated only one of the five possible shocks.

If only the postinteraction attraction scores had been analyzed, there would be apparent support for a reinforcement theory interpretation. Subjects liked a confederate with similar attitudes more than one with dissimilar attitudes; and they liked the confederate who shocked them once better than the one who shocked them five times. Some of the other impression scales supported these reinforcement-type results. The confederate was rated as more negative on the evaluative dimension of the Semantic Differential and was perceived as more aggressive and potent when he delivered five shocks than when he shocked the subjects only once. Though these impressions were obtained after the subjects had had the opportunity to retaliate against the confederate, Brown, Schlenker, and Tedeschi (6) found exactly the same pattern of impressions in a study that used the same basic procedures as the present one except that the subjects did not have the opportunity to retaliate. There is little reason to believe that any catharsis-like effect was operating to moderate subjects' evaluations of the harm-doer in the present study.

Subjects viewed the confederate as more aggressive, the more harm he mediated. They also administered more shocks when they had received more harm. Thus, the subjects operated according to the principle of *Lex Talionis*, although they did not calibrate the number of shocks they delivered to match exactly the number mediated by the confederate. Instead, the subjects provided the typical over- and underpayment effect.

Subjects did not view themselves as more aggressive when they delivered more shocks to the confederate, though they did see themselves as more active.

Since the subjects had been attacked first and were both moderate and justified in their responses by a norm of reciprocity, there is no reason why they should have seen their own behavior as aggressive. In fact, subjects in all conditions of the experiment rated themselves on the nonaggressive side of the scale. This is instructive, since in most experiments on aggressive behavior, the subjects are viewed as more aggressive when they use shocks frequently even though they had been attacked first. These apparently divergent perceptions of experimenters and subjects should be more thoroughly investigated in future aggression studies.

The marginal effect of induced attraction on retaliatory behaviors was unexpected. It would be simple to dismiss this finding, since it does not meet the usual alpha values and since Hendrick and Taylor (11) did not find any effects of liking on negative reciprocity behaviors. Yet, a display of reluctance to hurt those one likes makes intuitive sense.

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DETERMINANTS OF THE PRIMACY EFFECT IN ATTRIBUTION OF ABILITY^{*1,2}

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SUMMARY

The primacy effect in attribution of ability was explored in the present study. Subjects observed a tutoring session in which a student displayed one of four sequences of learning on the two parts of the lesson: success-success, failure-failure, failure-success, or success-failure. In an attempt to eliminate the primacy effect, in some conditions the lesson was structured as two discrete units temporally. Elementary school subjects either viewed the two parts of the lesson contiguously, or they observed the second part two days after seeing the first part. Separating parts of the lesson did not eliminate the primacy effect: early performance had a greater effect on attribution of ability than later performance. Recall results did not support the theory that the primacy effect is due to the assimilation of later performance to initial expectation.

A. INTRODUCTION

Recent experimental evidence has shown that there is a stable and powerful primacy effect in attribution of ability: early information about a stimulus person's performance has a greater impact than later information (1, 7). The finding of a primacy effect is congruent with more general research on impression formation (2, 3). In Asch's paradigm, subjects are presented with a list of adjectives describing a hypothetical person. Asch (3) found that words early in the list have more influence than those that appear

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² Request for reprints should be sent to the second author at the address shown at the end of this article.

later. According to Asch, subjects reinterpret the meaning of adjectives later in the list in terms of the first adjectives they receive, forming an overall "Gestalt." Anderson (2) interpreted the primacy effect in terms of a weighted-averaging model of information integration. He suggested that the meaning of words in a list remains constant, but the weight given to each word by the subject decreases for words nearer the end of the list. Although there is evidence to support a weighted-averaging process, no explanation for the effect has been presented.

As Jones and Davis (6) have pointed out, the use of lists of adjectives to describe persons, as in the work of Anderson and Asch, must be considered a somewhat static procedure that does not approximate the real-life attributional process in which dispositions are inferred from behavior. In addition, these investigators did not vary different levels or strengths of a *single* disposition (such as high *versus* low friendliness); instead, they presented subjects with lists composed of independent dispositions. Thus, a person might be described as cold, intelligent, and hard-working—all very different dispositional characteristics which the subject must integrate. It is difficult, therefore, to extrapolate directly from the type of procedure used in the research of Asch and Anderson to the problem of attribution of ability.

The most extensive work in ability attribution in behavioral situations has been carried out by Jones and his colleagues (8, 9). In a number of experiments, subjects observed a stimulus person who attempted to solve a series of problems supposedly indicative of intellectual ability. The stimulus person (a confederate of the experimenter) either showed a pattern of ascending or descending success over the trials, while maintaining the same overall number of correct answers in both patterns. In this situation, a primacy effect emerged consistently: the learner was seen as being significantly more intelligent and successful when he displayed success on initial trials (and then declined in performance) than when he was initially unsuccessful (and then increased in performance). The primacy effect occurred even though the number of objectively correct answers was the same in both the ascending and descending sequence.

Subsequent evidence has confirmed the generality of the finding of a primacy effect in ability attributions. For instance, Allen and Feldman (1) found that sixth-grade children attributed greater success and ability to a third-grader when he initially performed well than when he initially per-

formed poorly—regardless of subsequent success or failure in the lesson. Although in a few instances primacy effects in ability attributions have not been found (10, 13), these occurred when subjects observed or participated in game-playing situations with somewhat unique characteristics. In general, though, a primacy effect in attributions of ability has been found.

Jones *et al.* (8) suggest that the primacy effect is due to a social judgment process in which early success or failure acts as an anchor or expectation, and later performance is assimilated to the initial expectation. This hypothesis is based on the assumption that persons consider ability to be a stable disposition. After an initial expectation of success is established, variations in performance are perceived by subjects as being closer to the initial anchor than is objectively true because of assimilation to the anchor. To support this hypothesis, Jones *et al.* (8) presented experimental evidence showing that subjects do in fact distort recall in favor of early occurrences when a "stable entity" such as ability is assumed.

If an assimilation process is the major determinant of the primacy effect, then separation of the behavior sequence into discrete segments should reduce or eliminate the effect. It is unlikely that the primacy effect will occur across situations that are divided into cognitively discrete units of behavior, since a unit that is perceived as being truly different should produce a new anchor point to which subsequent behavior is compared and assimilated. Thus, when an observer perceives a differentiation between early and later behavior, a new anchoring point should develop. Establishing a new anchor point should result in either an elimination of the primacy effect in ability attributions or, in extreme cases, in a recency effect.

Indirect evidence for the notion that primacy effects can be eliminated when two segments of behavior are somehow differentiated comes from a number of studies. Thibaut and Ross (12), for instance, found that when subjects were not forced to make an early commitment to a particular level of ability, assimilation effects did not occur in making a long series of separate judgments of an artist's ability. Likewise, the psychophysical literature shows that making repeated successive judgments of physical stimuli typically results in contrast effects—not assimilation (11). It may be argued that making repeated judgments acts to differentiate behavior being observed into discrete units, and as a consequence encourages the emergence of a new anchor. It is possible, then, that anything that would differentiate ongoing behavior into separate units would result in elimination of primacy

effects based on early expectations. Thus, a primacy effect in ability attributions should not occur if the change in performance happens at a point in time that clearly divides the performance sequence into discrete segments.

A direct test of this proposition was carried out in a study by the present authors (4). Subjects observed a two-part lesson between a tutor and a tutee. The tutee performed either consistently well, consistently poorly, started well in the first part and then did poorly in the second part, or did poorly and then well. Some subjects received a manipulation designed to break the two parts of the lesson into discrete behavioral units by informing them that the second part of the lesson that they were to observe had actually occurred two days following the first part. Although these subjects observed both parts at one sitting, it was expected that such a cognitive differentiation between the two parts of the lesson would tend to eliminate the primacy effect. However, results from the experiment yielded no support for this hypothesis. A primacy effect emerged on items assessing the tutee's intelligence and perceptions of his performance; early success was a more important determinant of subjects' assessments than later performance.

In addition, some direct evidence against an explanation of the primacy effect based upon assimilation processes emerged. Most subjects were able to identify the explicit sequence of performance they had observed with almost no distortion. Apparently subjects were closely attending to tutees' performance throughout the experiment. We would have expected distortion of second-part performance—not accurate recall—if subjects were assimilating later performance to an earlier expectation. Results on a question asking how much the tutee *learned* also argue against a generalized tendency to distort all aspects of later performance; on this one particular item, a recency effect occurred. Of course, results for this item must be viewed cautiously, since this was the only exception to a pervasive pattern of primacy effects found in the experiment.

The most plausible hypothesis for explaining the lack of elimination of the primacy effect in Feldman and Allen (4) is that the nature of the differentiation between the first and second parts of the lesson might have been weak or unconvincing. To render the initial expectation inoperative, it may be necessary to produce a stronger difference between lesson parts than we produced by the alleged temporal separation. Although all subjects successfully recalled the time interval supposedly existing between lesson parts, still we cannot rule out the possibility that the difference between

parts was not made sufficiently salient. The present experiment tests this possibility by ensuring that the time differential between lesson parts is emphasized strongly enough so that the two parts of the lesson are clearly perceived as two discrete segments of behavior.

In the present study, subjects actually observed the second part of the lesson two days after having seen the first part. It is reasonable to assume that the initial anchoring expectation held by the subject would not be applied to second-part performance, since the passage of time should produce the perception that the second part of the lesson constitutes a separate, discrete behavioral unit. This should enhance the subject's adoption of a new anchor based upon the tutee's performance in the second part of the lesson. It is unlikely that the discrete and separate nature of the lesson parts could be made more obvious. In addition, we would expect that the simple passage of time should weaken the memory of any performance expectation derived from first-part success, thus increasing the impact of second-part performance. For these reasons, then, it is predicted that after a lapse of a two-day period between lesson parts the subjects' attributions of ability and performance would not reveal a primacy effect.

B. METHOD

1. *Subjects*

Subjects were 51 males and 45 females in the fifth and sixth grades. Six subjects were omitted from the data analysis for failure to complete the dependent measure.

2. *Procedure*

Subjects were told that we were interested in finding the best way of planning tutoring programs in elementary school. They were instructed to watch one tutor-tutee pair on videotape and then to answer some questions about what they saw.

Subjects were shown a 15-minute videotaped sequence of a tutoring lesson with a sixth-grader tutoring a third grader. Each teaching sequence began with the older child tutoring the younger child in a method of identifying trapezoids and parallelograms. Following this brief lesson, the tutor was shown administering two sets of exercises to the tutee. The tutee was presented a series of 12 figures in each part of the lesson exercises and was asked to identify whether the figure was a trapezoid, a parallelogram, or neither.

Male subjects observed a tape of a male tutor-tutee pair; females viewed a female dyad. Subjects observed the videotape in classrooms in groups of five to eight same-sex children. Previous research has shown that observation of a dyad results in attributions of ability equivalent to those made by actual participants in the situation (9); thus, the present method of observation has the advantage of greater control and economy with no loss of sensitivity.

3. *Experimental Manipulations*

The children in the videotape were actually paid confederates. This made it possible to control the apparent degree and pattern of learning. Experimental manipulations consisted of varying orthogonally the first-part performance (success or failure), second-part performance (success or failure), and amount of elapsed time between viewing the first and second parts (either two days or no elapsed time).

First- and second-part performances were combined factorially to form four different sequences, only one of which was shown to a subject:

a. *Success-success*. In this condition, the tutee performed well in both the first and second set of exercises. The tutee answered correctly on 75% of the questions and, to provide verisimilitude, erroneously on 25% of the questions. The incorrect answers were randomly interspersed among the correct responses.

b. *Failure-failure*. This condition was the obverse of the Success-success lesson; the tutee answered 75% of the questions incorrectly on both sets of exercises.

c. *Success-failure*. In this condition, tutees answered correctly 75% of the instances in the first set of exercises, and incorrectly 75% of the time in the second set. Performance was identical to that in the first part of the Success-success and second part of the Failure-failure conditions.

d. *Failure-success*. The tutee in this condition performed poorly in the first set of exercises (identical to performance in the first part of the Failure-failure condition) and successfully in the second set of exercises (as in the second part of the Success-success condition).

The major experimental manipulation consisted of varying the length of time between viewing the two lesson parts. Subjects either viewed both parts of the lesson contiguously, or they viewed the second part of the lesson two days after seeing the first part. Subjects were told after they viewed the first part of the lesson whether they would see the second part immediately

or two days later. Subjects were told that the time period elapsed between their observing the parts of the lesson was identical to that experienced by the tutor and tutee in the videotape.

Promises were elicited from all subjects that they would not talk with their classmates regarding the experiment until the procedure was completed for all subjects, two days after the initiation of the experiment. The importance of not discussing the experiment with their peers was stressed, and questioning of subjects after the experiment showed that they had not communicated with each other.

4. *Dependent Measures and Method of Analysis*

After subjects had viewed both parts of the lesson, the experimenter administered a number of seven-point Likert scales and some forced-choice questions designed to assess the subjects' perceptions of tutee performance. Subjects were asked how well the tutee did and for attributions of ability and learning. Data from each Likert scale were analyzed in a $2 \times 2 \times 2 \times 2$ analysis of variance. The four factors were as follows: tutee's performance on the first part of the exercises (success or failure), tutee's performance on the second part of the exercises (success or failure), alleged time between the two parts of the lesson (contiguous or separated), and sex of subject (male or female).

C. RESULTS

1. *Attribution of Ability*

Two items asked about subjects' attribution of ability concerning the tutee. One question asked how intelligent the tutee was in general, and the other asked how smart the student was on the particular type of lessons he was given. Both items yielded basically equivalent results.

On the item assessing the tutee's intelligence, there was no significant effect for contiguity of lesson parts; i.e., whether subjects viewed the parts of the lesson together or separated by a two-day period made no difference in their ability attributions. Main effects occurred for first-part learning ($F = 18.61, p < .001$) and for second-part learning ($F = 5.28, p < .02$). There was also a significant lesson contiguity \times sex interaction ($F = 6.31, p < .01$). Male subjects rated the tutee as more intelligent when the two parts of the lesson were viewed together than when they were separated by two days; female subjects showed the opposite pattern.

Examination of overall mean scores in column 1 of Table 1 shows that

TABLE 1
MEAN SCORES FOR PERCEPTION OF TUTEE PERFORMANCE

Condition	Intelligence	How smart on this exercise	How well tutee did	How much learned	How well tutor did
First-part success	5.22	5.04	5.45	5.53	6.37
First-part failure	4.38	3.77	3.72	5.06	5.72
Second-part success	5.06	4.73	5.02	5.62	6.11
Second-part failure	4.56	4.10	4.19	4.98	6.00
Success-success (26)	5.42	5.19	5.92	5.73	6.27
Success-failure (23)	5.00	4.87	4.91	5.30	6.48
Failure-success (22)	4.64	4.18	3.95	5.50	5.91
Failure-failure (25)	4.16	3.40	3.52	4.68	5.56

Notes: Higher numbers indicate more positive responses on a seven-point scale. Numbers in parentheses indicate number of subjects in individual cells.

tutees were viewed as being more intelligent when they performed well than when they performed poorly in both the first part and second part.³ With reference to *strength* of the main effects and with the use of Hays' formula (5), however, it is clear that performance in the first part of the lesson accounted for a much greater amount of variance than did second-part performance (16% versus 4%, respectively). Thus, there was a primacy effect for ability attributions, with first-part success or failure being more influential in determining the final attribution than second-part success or failure. The lack of a main effect for the lesson part contiguity indicates that the primacy effect occurred even when some subjects saw the second part of the lesson two days after the first part.

On the item asking how smart the tutee was in these particular types of exercises, again there was no effect for lesson part contiguity. (These data are shown in the second column of Table 1.) But main effects were found for first-part performance ($F = 35.74$, $p < .001$) and for second-part performance ($F = 6.57$, $p < .01$). As on the previous item, good performance led to attributions of greater intelligence in the exercises overall, but first-

³ The data in Table 1 are grouped according to the primary results derived from the analysis of variance. The first row shows the collapsed mean for conditions in which the tutee was successful in the first part (Success-success and Success-failure conditions), while the second row shows the collapsed mean for first-part failure (Failure-failure and Failure-success conditions). Likewise, the third row shows the mean for second-part success (found by combining the Success-success and Failure-success conditions), and the fourth row shows the mean for second-part failure (with Success-failure and Failure-failure conditions combined). For purposes of clarity, the individual cell means for each particular sequence of tutee performance are also presented in rows five through eight. All means shown are collapsed across the factors of lesson-part contiguity and sex of subject.

part performance was more influential (accounting for 27% of the variance) than second-part performance (accounting for only 5% of the variance). Thus, the primacy effect was manifested again. A significant first-part performance \times sex interaction was also found ($F = 5.87$, $p < .02$). This interaction was due to the difference between good and poor performance in the first part of the lesson being somewhat more marked for male than for female subjects.

Thus, both items assessing attribution of ability yield essentially the same result—a primacy effect. Separating the lesson parts had no significant effect on the primacy phenomenon; even when the second part of the exercise was viewed two days after seeing the first part, performance in the first part determined the attributions made about the tutee.

2. *Perception of Performance*

Subjects were asked to respond to an item asking how well the tutee had done. Results of an analysis of variance showed main effects for first-part performance ($F = 58.73$, $p < .001$) and second-part performance ($F = 10.43$, $p < .002$), as well as a lesson contiguity \times sex interaction ($F = 6.57$, $p < .01$). Examination of means shown in column 3 of Table 1 shows that successful performance resulted in perceptions of better performance than unsuccessful performance. The interaction was the result of male subjects' recalling more successful performance when the lesson parts were contiguous than when they were separated, and females showing the opposite pattern.

An estimate of the strength of the two main effects showed that first-part performance was substantially more influential (accounting for 38% of the variance) than second-part performance (accounting for only 9% of the variance) in determining subjects' perceptions of how well the tutee performed. Thus, a primacy effect emerged in subjects' overall assessments of tutee performance.

3. *Learning*

One item assessed how much the tutee learned overall. As in the previous items, the main effect for contiguity of exercise parts was not significant. The main effect for second-part performance was significant ($F = 5.11$, $p < .03$). There were no other main effects which reached significance. Overall, subjects viewed tutees who performed well in the second part as learning more than those who performed poorly, with first-part performance having little effect, as shown in column 4 of Table 1. For this particular

item, then, there was a recency effect, corroborating the results for this item in the earlier (4) experiment.

Significant interactions also appeared on the question asking how much the tutee had learned. A lesson part contiguity \times sex interaction ($F = 9.94$, $p < .002$) indicated that male subjects thought the tutee learned more when the lesson parts were contiguous than when they were separated, but the pattern was reversed for females. A second-part performance \times lesson contiguity \times sex interaction ($F = 3.81$, $p < .05$) was also found. Male subjects who viewed the lesson parts contiguously rated subjects who performed well in the second part as learning slightly less than those subjects who performed poorly in the second part. For subjects in other conditions this relationship was reversed, as would be expected.

Overall, then, there was a *recency* effect for subjects' assessments of how much the tutee learned; performance on the second part of the exercises primarily determined the subjects' ratings of amount the tutee learned.

4. Tutor Success

Subjects were asked to assess how well the tutor did as a teacher. Only one significant main effect emerged—for first-part performance ($F = 6.51$, $p < .01$). In conditions where the tutee performed well in the first part of the lesson exercises, the tutor was seen as doing well; but when the tutee performed poorly in the first part, he was seen as doing poorly (Table 1, column 5). Subsequent success or failure in the second part of the lesson did not have a significant effect on the subject's attribution of tutor success, and there was no effect of separating the lesson by two days. We thus find a primacy effect in attributions of ability regarding *tutor* success or failure, equivalent to the primacy effect in attributions regarding the *tutee*.

5. Recall of Performance Sequence

Another question was designed to obtain the subjects' specific impressions of the sequence of tutee performance. Subjects were asked to indicate whether tutees (*a*) had performed well throughout, (*b*) had performed poorly throughout, (*c*) had started well and then had done poorly, or (*d*) had started poorly and then had done well. On this item there was no difference due to contiguity of lesson parts. A significant difference was found in perceived condition according to the subjects' actual condition ($\chi^2 = 128.35$, $p < .01$). As can be seen in Table 2, most subjects correctly identified the sequence that they actually observed.

TABLE 2
SUBJECTS' PERCEPTIONS OF SEQUENCE OF TUTEE PERFORMANCE (PERCENT)

Perceived condition	Actual condition			
	Success-success	Success-failure	Failure-success	Failure-failure
Success-success	88	13	14	20
Success-failure	4	69	0	4
Failure-success	4	9	82	20
Failure-failure	4	9	4	56
	(100)	(100)	(100)	(100)

Note: Italicized numbers represent percentage of veridical reports.

D. DISCUSSION

It was hypothesized that breaking a lesson into two discrete units would eliminate the primacy effect usually found in ability attributions. We separated the first half of the lesson from the second by an intervening two-day period. Although there were some second- and third-order interactions relating to the lesson contiguity manipulation, there were no systematic results indicating an elimination of the primacy effect. Attributions of ability were mainly determined by behavior—success or failure—in the first part of the lesson, with performance in the second part having a smaller influence on observers' attributions. Rating of overall performance, like ability attribution, was not affected by the two-day time period between lesson parts. Perception of how well the tutees performed was due primarily to first-part success, with subsequent performance having a much smaller influence.

The present data do not provide support for our hypothesis that a temporal differentiation between two parts of a lesson would eliminate the primacy effect. On grounds of memory factors alone, one might have expected these youthful subjects not to recall first-part performance as well as second-part performance—thus attenuating the primacy effect. Yet, this was not the case: initial performance emerged as the predominant determinant of subjects' responses, in spite of the two-day period between early and later performance. Perhaps we did not differentiate first- and second-part performance sufficiently to eliminate the primacy effect. This seems rather unlikely, however, since subjects observed the behaviors after the lapse of two days. It is also possible, of course, that two days is too small a period of time to produce a clear cognitive differentiation. If the amount of time between initial and later performance were increased still further, the likelihood of a primacy effect occurring would undoubtedly eventually decrease.

Some of our data suggest that assimilation may not be an adequate mechanism to explain the primacy effect in the present experiment. First, subjects did not display a generalized primacy effect, as would be expected if recall of performance were assimilated toward initial expectation. Rather, they appeared to be highly discriminating in responding to the various items on the dependent measure. On one item, concerning the amount the tutee learned during the lesson, a recency effect was obtained. Subjects perceived that more learning had occurred when the tutee succeeded in the second part than when he performed poorly in the second part; there was no differential effect of perceived learning due to the tutee's first-part performance. Since this result was also found in an earlier study (4), it does not seem to be a mere chance occurrence.

There is more direct evidence that questions the assimilation explanation of the primacy effect in the present study. On the question asking for subjects' perceptions of the pattern of tutee performance, little distortion was found. Most subjects were able to recall the precise sequence of the tutee's success and failure. We would not expect such accurate recall if subjects were distorting second-part performance to conform to an expectation formed earlier. And notice that when distortion of recall did occur (Table 2), subjects distorted their memory of performance more often in the direction opposite the initial expectation.

Taken together, results on the items concerning degree of learning and explicit performance sequence cast doubt on the assumption of a generalized tendency to distort second-part performance in congruence with first-part expectations. Hence, assimilation may not be a satisfactory explanation for the primacy effect found in the present study.

It is clear that early performance contributes disproportionately to attributions of ability and perceptions of performance. Apparently, individuals apply differential weighting to various portions of performance in forming ability attributions. Yet, this remains merely a descriptive statement. The underlying psychological mechanisms must be discovered in order to understand more satisfactorily the primacy effect.

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CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, **96**, 135-136.

THE RELATIONSHIP OF SCHOOL, GRADE, AND SEX TO TRADITIONAL-MODERN ATTITUDES AMONG GUSII STUDENTS IN KENYA*¹

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Individual differences in the traditional-modern attitudes of students in various cultures have been reported. In terms of school experience, LeCompte and LeCompte² found that first-year secondary school students in Turkey held more traditional attitudes than third-year students. They also reported that students attending a secondary school established by American missionaries held more modern attitudes than students attending a Turkish government school. Examining the relationship of sex to attitudes, Omari³ found that among Ghanaian secondary school students, female students held more modern attitudes than male students.

This paper examines the traditional-modern attitudes of Gusii students of southwestern Kenya. A sample of 371 students from primary, secondary, and postsecondary schools was chosen. They were given questionnaires consisting of traditional and modern statements covering such topics as polygyny, the role of women, the family, witchcraft, and health. The questionnaires

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¹ The writer wishes to thank Dr. Marshall H. Segall, Dr. Edward J. O'Connell, Charles and Mary Maragia Gechuki, and Elizaphan Getonto O'Nyaramba for their assistance.

² LeCompte W., & LeCompte, G. Effects of education and intercultural contact on traditional attitudes in Turkey. *J. Soc. Psychol.*, 1970, **80**, 11-21.

³ Omari, T. P. Changing attitudes of students in West African society toward marriage and family relationships. *Brit. J. Sociol.*, 1960, **11**, 197-210.

were administered by American and Gusii teachers. Each administrator randomly distributed both English and Gusii language questionnaires.⁴ Analysis of the questionnaires found that 20% (74 subjects) had strong enough response biases to be eliminated from the final analyses. Examination of the questionnaire items found a number of items that were ambiguous and/or repetitious. These items were removed from the final version of the attitude scale.

On the basis of an attitude scale of 36 statements and a sample of 297 students, it was found that upper-level (Forms III and IV) secondary school students held more modern attitudes than lower-level (Forms I and II) students ($F = 26.0$, $df = 1/241$, $p < .001$). A sex effect ($F = 13.7$, $df = 1/237$, $p < .001$) was evident, with female students expressing more modern attitudes than male students. In terms of the three secondary schools investigated, significant differences between schools were found ($F = 15.8$, $df = 2/237$, $p < .001$). The Catholic girls' school held the most modern attitudes, followed by the Protestant mixed (boys and girls) school, and then the government boys' school. For the most part, it appears that the school difference is a sex difference. It was also found that the upper-primary (Protestant) boys were significantly more traditional than the lower-level secondary (Protestant) boys ($t = 3.79$, $df = 55$, $p < .0005$). However, no significant differences were found between the postsecondary (government school) boys and the upper-level secondary (government school) boys ($t < 1.0$, $df = 40$, n.s.).

The results of this study clearly show that differences in traditional-modern attitudes exist among Gusii students. It has been repeatedly reported in cross-cultural studies that school is a modernizing force. Therefore, the results of this study are consistent with previous trends reported elsewhere in Africa and in other parts of the world.

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⁴ Feldman, R. H. L. The effect of administrator and language on traditional-modern attitudes among Gusii students in Kenya. *J. Soc. Psychol.*, 1975, 96, 141-142.

GROUP PRESSURE EFFECTS ON AMERICAN AND CHINESE FEMALES*

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In an earlier conformity study, Meade and Barnard² had American and Chinese male Ss first give their opinions, after which five confederates gave contrary opinions on a series of six controversial issues. Conformity was assessed by latency of S's responses on subsequent issues, number of changes of opinion, and degree of opinion change. The present study is a replication with the use of 60 female Ss from The Chinese University of Hong Kong and 60 female Ss from Western Washington State College.

As was the case for male Ss in the earlier study, greater group pressure effects occurred in the presence of male confederates. The average increase in latencies with male confederates was 30.75 sec, and for female confederates it was 18.91 ($F = 26.83$, $p < .01$). The average amount of opinion shift with male confederates was 2.18 points, while with females it was .93 ($F = 7.31$, $p < .01$). The total number of shifts with male confederates was 207, while with females it was 102 ($t = 6.34$, $p < .01$).

The cross-cultural variable also produced significant variation although in a different way than for males. The average latency increase for Americans was 20.76 sec, and for Chinese it was 28.96 sec ($F = 18.23$, $p < .01$). There was also significant interaction between cultural groups and sex of confederate ($F = 7.82$, $p < .01$). As was true for male Ss the total number of shifts was greater for Chinese than for Americans, 186 and 123 respectively ($t = 4.03$, $p < .01$).

With male Ss there were shifts *away* from the group judgment, as well as toward it, which was taken as evidence of anticonformity although assessed differently than by Willis and Hollander³ and Frager.⁴ Similar effects were found for females and were more frequent for Americans than for Chinese, 34

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² Meade, R., & Barnard, W. Conformity and anticonformity among Americans and Chinese. *J. Soc. Psychol.*, 1973, **89**, 15-24.

³ Willis, R., & Hollander, E. An experimental study of three response modes in social influence situations. *J. Abn. & Soc. Psychol.*, 1964, **96**, 150-156.

⁴ Frager, R. Conformity and anticonformity in Japan. *J. Personal. & Soc. Psychol.*, 1960, **15**, 203-210.

and 7 respectively ($t = 5.62, p < .01$). However, while the number of Chinese male and female Ss showing anticonformity was nearly the same, there were about half as many American females with this characteristic as there were males in the earlier study.

There was one outcome of the present study which did not occur at all with males. Several Ss were excused from further participation at some point in the procedure when they stated that they could just not reach a decision with respect to the issue being considered. This generally occurred after unusually long latencies. Eight Americans and 22 Chinese exhibited this reaction ($t = 2.84, p < .01$). Most of these failures to respond appeared at trial 3 and beyond. Six of the Americans who failed to respond and 20 of the Chinese did so in the presence of male confederates. It is proposed that this inability to respond at all after having experienced being a minority of one could be considered an extreme form of response to group pressure having come to the point of surrogate withdrawal.

The data of this study indicate that females in both cultural groups responded to group pressure effects in ways both similar and different from male. Chinese females exhibited a greater latency and greater tendency to shift opinion than Americans and they shifted more often. The degree of these effects in the presence of male confederates appears to be greater than for male Ss. This sex difference is supported further by the additional finding that several females developed inability for further participation after the unanimous majority had indicated contrary opinions a number of times. Finally, the tendency toward anticonformity was greater for Americans than for Chinese.

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REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, **96**, 139-140.

AN EMPIRICAL EXAMINATION OF THE NEED-GRATIFICATION THEORY OF JOB SATISFACTION*

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Need gratification theory argues that the individual's psychological needs are arranged in a hierarchy from lower- to higher-order needs and influence the relationship between job factors and satisfaction.¹ Unlike the two-factor theory of job satisfaction,² it maintains that both content factors (e.g., achievement, work itself, responsibility, advancement) and context factors (e.g., company policy, supervision, interpersonal relations, working conditions) can serve as satisfiers or dissatisfiers. Persons whose lower-order needs are unfulfilled obtain satisfaction from changes in the gratification of their lower-order needs, which are responsive mainly to context factors in the work situation. Persons whose lower-order needs are fulfilled obtain satisfaction from changes in the gratification of their higher-order needs, which are responsive mainly to content factors. This implies that context elements are more strongly related to general feelings of job satisfaction among subjects whose lower-order needs are ungratified, whereas content elements are more strongly related among subjects whose lower-order needs are well-gratified.

To test these predictions 100 insurance clerks were given (a) Porter's need-fulfilment questionnaire, to measure to what extent their major needs are

* Received in the Editorial Office, Provincetown, Massachusetts, on December 27, 1973. Copyright, 1975, by The Journal Press.

¹ Wolf, M. Need gratification theory: A theoretical formulation of job satisfaction-dissatisfaction and job motivation. *J. Appl. Psychol.*, 1970, **54**, 87-94. Also, Maslow, A. H. *Motivation and Personality*. New York: Harper, 1954.

² Herzberg, F., Mausner, B., & Synderman, B. *The Motivation To Work*. New York: Wiley, 1959.

gratified at work;³ (b) Halpern's job factor satisfaction scale, to measure their satisfaction with context and content factors⁴; and (c) a seven-point self-rating scale to measure overall job satisfaction, taking both favorable and unfavorable aspects into account.

Subjects were divided into two groups on the basis of their mean fulfilment scores for the lower-order needs on the Porter questionnaire. Those subjects ($n = 28$) whose mean score was less than one comprised the "gratified" group; those ($n = 38$) greater than two, the "ungratified" group. The correlation between content factors and overall job satisfaction ($r = .42$) was not significantly greater ($p > .05$) than that between context factors and job satisfaction ($r = .51$) in the gratified group. The correlation between context factors and overall job satisfaction ($r = .43$) was not significantly greater ($p > .05$) than that between content factors and job satisfaction in the ungratified group ($r = .36$). These results do not support the predictions. It is suggested, along with Neeley,⁵ that this is because the theory does not make sufficient provision for situational differences and their potential interaction with psychological needs.

The mean job satisfaction score of the gratified group ($M = 5.76$, $SD = .82$) was significantly greater ($p < .01$) than that of the ungratified group ($M = 4.83$, $SD = .74$). The gratified group was significantly ($p < .01$) more satisfied with the content factors than the ungratified group ($M = 5.51$, $SD = .80$ vs. $M = 4.35$, $SD = .79$). They were also more satisfied with the context factors than the latter group ($M = 5.57$, $SD = .90$ vs. $M = 4.64$, $SD = .98$). In the entire sample there was a significantly positive correlation between need-fulfilment and overall job satisfaction ($r = .54$, $p < .01$). These three results confirm that job satisfaction is related to perceived need-fulfilment.⁶

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³ Porter, L. W. Job attitudes in management: I. perceived differences in need fulfilment as a function of job level. *J. Appl. Psychol.*, 1962, **46**, 375-384.

⁴ Halpern, G. Relative contributions of motivator and hygiene factors to overall job satisfaction. *J. Appl. Psychol.*, 1966, **50**, 198-200.

⁵ Neeley, J. D. A test of the need gratification theory of job satisfaction. *J. Appl. Psychol.*, 1973, **57**, 81-88.

⁶ Vroom, V. H. *Work and Motivation*. New York: Wiley, 1964.

THE EFFECT OF ADMINISTRATOR AND LANGUAGE ON TRADITIONAL-MODERN ATTITUDES AMONG GUSII STUDENTS IN KENYA*¹

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Past studies on attitudes among various cultural groups indicate that such factors as the ethnicity of the administrator/interviewer and the language of the questionnaire affect respondents' attitudes. Athey *et al.*² found that white respondents in the United States gave socially more acceptable responses about blacks when interviewed by a black than when interviewed by a white. Botha,³ examining the effect of language on attitudes in Lebanon, found significant differences when bilingual Arabic-French students were tested in Arabic and in French, but no differences with bilingual Arabic-English students.

This study examines the simultaneous effects of administrator and language on the traditional-modern attitudes of Gusii students of southwestern Kenya. An English language questionnaire of traditional and modern statements was translated into the Gusii language and then "back-translated" to ensure that the English and Gusii questionnaires were equivalent. Administration of the questionnaires was conducted by American and Gusii teachers. Male and female students in intermediate, secondary, and postsecondary schools were randomly assigned to one of four experimental conditions: American administrator/English language, American administrator/Gusii language, Gusii administrator/English language, and Gusii administrator/Gusii language.

On the basis of an attitude scale of 36 statements and a sample of 297 bilingual Gusii-English students, no administrator effect was found ($F < 1.0$, $df = 1/289$, n.s.), and no administrator-by-language effect was evident ($F < 1.0$, $df = 1/289$, n.s.). As with the Bryant *et al.*⁴ study, which also demon-

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¹ The writer wishes to thank Dr. Marshall H. Segall, Dr. Edward J. O'Connell, Charles and Mary Maragia Gechuki, and Elizaphan Getonto O'Nyaramba for their assistance.

² Athey, K. R., Coleman, J. E., Reitman, A. P., & Tang, J. Two experiments showing the effect of the interviewer's racial background on responses to questionnaires concerning racial issues. *J. Appl. Psychol.*, 1960, **44**, 244-246.

³ Botha, E. Verbally expressed values of bilinguals. *J. Soc. Psychol.*, 1968, **75**, 159-164.

⁴ Bryant, E. C., Gardner, I., Jr., & Goldman, M. Responses on racial attitudes as affected by interviewers of different ethnic groups. *J. Soc. Psychol.*, 1966, **70**, 95-100.

strated no administrator effect, the students may have seen both administrators simply as teachers performing a modern task of administering a questionnaire, and were less concerned with their ethnicity in terms of the traditional-modern dimension.

A language effect, however, was found ($F = 5.2$, $df = 1/289$, $p < .025$). Respondents who received the questionnaire in English expressed more modern attitudes than respondents who received the questionnaire in Gusii, the language of the traditional culture. The language effect, however, was present only among the most modern groups (female and upper-level secondary school students).⁵ Therefore, it appears that English, the language of the modern culture, acted to elicit greater expressions of modernity among persons who hold modern attitudes.

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⁵ Feldman, R. H. L. The relationship of school, grade, and sex to traditional-modern attitudes among Gusii students in Kenya. *J. Soc. Psychol.*, 1975, **96**, 135-136.

BEHAVIOR AND PERSON PERCEPTION IN MIXED MOTIVE GAMES*¹

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The effects of different simulated game-playing strategies of the "other" player in mixed-motive games are dubious. The present research was designed to determine if different types of preprogrammed feedback about the "other's" game responses in the dyadic game situation would affect a subject's game-playing behavior and his perception of the "other" player.

Eighty college students served as Ss; half were assigned to the 10% competitive feedback group (very cooperative) and half to the 90% competitive group (very competitive). All Ss were run in pairs of the same sex.

Extensive pre-experimental instructions informed Ss as to the nature of the experimental game situation. Fifty-six trials of two choice decomposed games were run. The game consisted of two columns of numbers with two numbers in each column. (Numbers indicated the points *S* would receive and those he would give to the other *S* by choosing that column.) During the first 28 trials preprogrammed feedback about the "other's" responses to the games was given to *S* after each trial, this feedback being either 10% or 90% competitive. No feedback was given during the remaining trials. After completion of the trials, Ss were asked to evaluate their own and the "other's" motivation in playing the games on a cooperative-competitive scale. They also completed the Harrison Gough Adjective Check List (ACL),² checking those adjectives which they felt characterized the "other" player.

The game behavior analysis of variance indicates that Ss in the 10% competitive feedback group displayed more cooperative behavior than those in the 90% competitive feedback group ($F = 4.97$, df 1/76, $p < .05$). This finding substantiates earlier research which found that people tended to respond in kind to the type of game behavior of the "other" player.³

* Received in the Editorial Office, Provincetown, Massachusetts, on February 8, 1974. Copyright, 1975, by The Journal Press.

¹ This research was directed by Ronald Mueller under the Research Apprenticeship Program at the University of New Hampshire.

² Gough, H. G. Adjective Check List. Palo Alto, Calif.: Consulting Psychologists Press, 1952.

³ Bixenstine, V. E., & Wilson, K. V. Effects of level of cooperative choice by the other player on choices in a Prisoner's Dilemma game: Part 2. *J. Abn. & Soc. Psychol.*, 1963, **67**, 139-147.

No sex differences or differences between the first half and second half of the experiment were found. It also seems that the effects of the observed game-playing behavior of another were still present, even after the person no longer received such information.

The subjective ratings of the "other's" motivation differed significantly between the two feedback groups ($F = 196.89$, $df\ 1/76$, $p < .01$). Ss who received 10% competitive feedback rated the "other" as being more cooperative than those who received 90% competitive feedback. This finding indicates that the Ss were quite aware of the type of behavior being exhibited by the "other" player. The ratings of the S's own motivation did not differ significantly between groups.

The adjectives checked on the ACL were analyzed on the Favorable Scale of the ACL.⁴ Ss in the 10% competitive feedback condition checked more favorable adjectives than the Ss in the 90% condition ($\chi^2 = 17.87$, $df\ 1$, $p < .05$). This suggests that the subjects had a more favorable opinion of someone who cooperated with them.

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⁴ See scoring manual for ACL for derivation of the Favorable scale.

THE EFFECTS OF FEEDBACK AND EYE CONTACT ON PERFORMANCE OF A DIGIT-CODING TASK*¹

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Numerous studies demonstrate that research Ss can be unintentionally influenced by the expectations and desires of *E*. Studies are needed to determine the factors mediating these experimenter-bias effects. The present study examines two of these factors—eye contact and feedback on a prior task.

Jones and Cooper² studied the effect of the mutual glance in the *E-S* interaction. Their results show that the amount of eye contact given by *E* is an important determinant of *S*'s feeling tone. Further, it was shown that this feeling tone affects performance on a projective task. One purpose of the present study was to determine if eye contact would also affect performance on an objective task.

The present study examined performance on an objective digit-coding task. Using a digit-coding task, Shrauger and Rosenberg³ manipulated prior feedback and found that subjects given negative feedback performed more poorly than subjects given positive feedback.

Forty-eight male Ss were recruited from introductory psychology classes. Twenty females were also recruited and served as instruction readers. The study consisted of a 3×2 factorial design. The two independent variables were feedback and eye contact, with both variables being manipulated between subjects.

The experiment was conducted in two phases. In the first phase the male Ss were administered the Embedded Figures Test,⁴ which was used to manipulate feedback scores. Since Ss were given insufficient time on the test, it was possible to manipulate feedback without arousing suspicion as to the

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¹ Reprints are available from the second author at the address shown at the end of this article.

² Jones, R. A., & Cooper, J. Mediation of experimenter effects. *J. Personal. & Soc. Psychol.*, 1971, **20**, 70-74.

³ Shrauger, J. S., & Rosenberg, S. E. Self esteem and the effects of success and failure on performance. *J. Personal.*, 1970, **38**, 404-417.

⁴ Witkin, H. A. Embedded Figures Test. Princeton, N. J.: Educational Testing Service, 1962.

authenticity of the scores. Each *S* was randomly assigned either a very high score, a very low score, or no score.

In the second phase, *Ss* went to another room where the digit-coding task was administered. Eye contact was manipulated during the reading of the instructions. Half of the females read the instructions with as much eye contact as possible, while the other half used as little eye contact as possible. The digit-coding task provided the dependent measure in the study and was similar to the digit symbol task of the Wechsler Adult Intelligence Scale.

A 3×2 analysis of variance was done on the number of digits correctly encoded. The analysis shows a significant effect for feedback ($F = 4.27$; $df = 2, 42$; $p < .05$) and also for eye contact ($F = 4.03$; $df = 1, 42$; $p < .05$). A Duncan test shows that *Ss* given no feedback on the prior task correctly encoded fewer digits (mean = 68.39) than either the positive feedback (mean = 77.87) or negative feedback (mean = 76.77) groups. Thus prior feedback, regardless of its nature, improved digit-coding performance. High eye contact *Ss* correctly encoded more digits than low eye contact *Ss* (77.42 *vs.* 71.21).

The feedback finding is inconsistent with the Shrauger and Rosenberg finding. The fact that feedback facilitated performance, whether the feedback was positive or negative, is best interpreted by assuming that feedback makes the situation more evaluative for *S* and thus increases motivation. The eye contact finding replicates Jones and Cooper and extends the finding to an objective task.

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THE ACCEPTANCE OF GENERALIZED PERSONALITY INTERPRETATIONS*

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Previous studies have shown that individuals readily accept as accurate descriptions of their personalities from inventories.¹ However, there is little research into the factors facilitating this "gullibility effect." The present study was designed to test the relationship between (a) three personality factors (authoritarianism, internal-external control, and need for group approval), (b) the alleged source of the interpretation (computer-scored, psychologist-interpreted, fellow-student-interpreted), and (c) the degree to which these fake personality interpretations are seen as accurate descriptions of the individuals' own personalities.

In a Cape Town, South African high school, 87 students (average age 16.3 years) completed a questionnaire consisting of the F-scale to measure authoritarianism, Rotter's I-E scale to measure internal-external control and the Crowne-Marlowe SD scale to measure need for group approval.² A week later they were each returned identical personality interpretations and informed that they had been derived from their responses to the questionnaire. However, they were given different information as to who had made the interpretations. A third of the subjects were informed that the questionnaires had been analyzed by a computer (group 1), a third that they had been analyzed by a fellow-psychologist (group 2), and a third that they had been analyzed by a fellow-student (group 3). The personality interpretation was that used by Ulrich *et al.*,¹ with a few word-changes to make it suitable for 16-year-olds. The dependent variable was the subjects' ratings, on a five-point scale, of the degree

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¹ Stagner, R. The gullibility of personnel managers. *Person. Psychol.*, 1958, **11**, 347-352.
Ulrich, R. E., Stachnik, T. J., & Stainton, N. R. Student acceptance of generalized personality interpretations. *Psychol. Rep.*, 1963, **13**, 831-834. Snyder, C. R., & Larson, G. R. A further look at student acceptance of general personality interpretations. *J. Consult. & Clin. Psychol.*, 1972, **38**, 384-388.

² Adorno, T. W., Frenkel-Brunswick, E., Levinson, D. J., & Sanford, R. N. The Authoritarian Personality. New York: Harper, 1950. Rotter, J. B. Generalized expectancies for internal versus external control of reinforcement. *Psychol. Monog.*, 1966, **80**, Whole No. 609. Crowne, D. P., & Marlowe, D. A new scale of social desirability independent of psychopathology. *J. Consult. Psychol.*, 1960, **24**, 349-354.

to which the personality interpretation described their own personality (accuracy score).

The correlations of accuracy scores with the F scale ($r = .71$), with IE ($r = .20$), and SD ($r = .26$) were all significant ($p < .05$). However, a one-way analysis of variance revealed no significant differences between the mean accuracy scores of the three groups given different information ($F = 5.68$, $p > .05$): group 1, 3.48; group 2, 3.48; and group 3, 2.37. Twenty percent of the subjects felt that the interpretations were excellent, 15% that they were good, 30% average, 25% poor, and 10% very poor.

These results suggest that, in this sample at least, personality factors played a relatively significant part in determining acceptance of the personality interpretation as accurate, whereas the scoring source did not. The high proportion of subjects who felt the interpretations were "excellent" confirms previous studies which have shown that relatively unsophisticated subjects place a lot of confidence in personality inventories *per se*. The facts that the subjects placed great faith in the results of the inventories and that their acceptance of the results as being true of themselves was fairly independent of who acted as the scorer, suggests that Synder and Larson¹ are correct in claiming that the subjects' own judgment of the accuracy of a test should not be used as a criterion of validity.

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EFFECT OF DEFENDANT ATTRACTIVENESS, AGE, AND
INJURY ON SEVERITY OF SENTENCE GIVEN
BY SIMULATED JURORS*

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DAVID E. REYNOLDS AND MARK S. SANDERS

Landy and Aronson¹ have been cited as evidence that a defendant's social attractiveness can influence the harshness of the sentence levied on him by simulated jurors.² However, there are two problems. First, age and extent of injury suffered by the defendant were confounded with the attractiveness manipulation. The attractive defendant (AD) was older and injured, the unattractive defendant (UD) was young and uninjured. Second, the AD was not clearly attractive. The mean attractiveness rating given by Ss for the AD was 5.5 (neutral) on a nine-point scale. In the present study, Landy and Aronson's confounded variables were unconfounded, and new defendant descriptions, designed to be less ambiguous and more explicitly attractive and unattractive, were added.

One hundred forty-four Introductory Psychology students each read a case description of negligent homicide in which the defendant was described, then sentenced the defendant from 1 to 25 years in prison and rated his attractiveness on a 1 to 9 scale. A 2 (Strength of Attractiveness) \times 2 (Attractiveness) \times 2 (Age) \times 2 (Injury) design was used. The first two factors were manipulated by altering the description of the defendant's work history and marital status, and evaluative statements given by his peers.

Analysis of the attractiveness ratings yielded a significant Strength of Attractiveness \times Attractiveness interaction ($F_{1,128} = 12.98$, $p < .01$) indicating that in the unambiguous condition ($AD = 6.1$; $UD = 3.2$) defendants were perceived as more clearly different than in the ambiguous condition

* Received in the Editorial Office, Provincetown, Massachusetts, on February 28, 1974. Copyright, 1975, by The Journal Press.

¹ Landy, D., & Aronson, E. The influence of the character of the criminal and his victim on the decision of simulated jurors. *J. Exper. Soc. Psychol.*, 1969, **5**, 141-152.

² For example: Byrne, D., & Griffitt, W. Interpersonal attraction. *Ann. Rev. Psychol.*, 1972, **25**, 325. Fishbein, M., & Ajzen, I. Attitudes and opinions. *Ann. Rev. Psychol.*, 1972, **23**, 502. Hatton, D., et al. The effect of biasing information and dogmatism upon witness testimony. *Psychon. Sci.*, 1971, **23**, 425-427. Jones, C., & Aronson, E. Attribution of fault to a rape victim as a function of respectability of the victim. *J. Personal. & Soc. Psychol.*, 1973, **26**, 415-419. Mitchell, H., & Byrne, D. The defendant's dilemma: Effect of jurors' attitudes and authoritarianism on judicial decisions. *J. Personal. & Soc. Psychol.*, 1973, **25**, 123-129.

(AD = 5.6; UD = 4.5). Analysis of the prison sentences yielded only marginally significant effects. The Strength of Attractiveness \times Attractiveness interaction ($F_{1,128} = 3.54, p < .1$) indicated that in the ambiguous condition there was no difference ($F < 1.0$) in mean sentence (AD = 8.8 years; UD = 8.7 years). In the unambiguous condition (AD = 8.4 years; UD = 13.0 years); however, there was a strong effect of Attractiveness ($F_{1,128} = 6.83, p < .05$).

The only other effect to reach even a marginally significant level was the Strength of Attractiveness \times Age interaction ($F_{1,128} = 3.88, p < .1$). Defendant's age influenced sentence in the ambiguous (old = 7.1 years; young = 10.5 years) condition ($F_{1,128} = 3.75, p < .1$), but not in the unambiguous (old = 11.5 years; young = 10.0 years) condition ($F < 1.0$).

These results suggest that Landy and Aronson's conclusion was correct, but for the wrong reason. Apparently, the difference in sentencing they found, using ambiguous defendant descriptions, was due to the difference in age of the AD and UD. The present results suggest that Ss were operating within a hierarchy of cues. The social attractiveness of the defendant appeared to be most salient. If, however, it was ambiguous, Ss appeared to cue on the defendant's age. The situation seems to be somewhat more complex than portrayed by Landy and Aronson.

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Animal	<i>Anim.</i>	Medical	<i>Med.</i>
Applied	<i>Appl.</i>	Mental	<i>Ment.</i>
Archives	<i>Arch.</i>	Monographs	<i>Monog.</i>
Association	<i>Assoc.</i>	Neurology	<i>Neurol.</i>
Attitude	<i>Attit.</i>	Opinion	<i>Opin.</i>
Australian	<i>Aust.</i>	Orthopsychiatry	<i>Orthopsychiat.</i>
Behavior	<i>Behav.</i>	Personality	<i>Personal.</i>
British	<i>Brit.</i>	Personnel	<i>Person.</i>
Bulletin	<i>Bull.</i>	Philosophy	<i>Philos.</i>
Bureau	<i>Bur.</i>	Physics	<i>Phys.</i>
Canadian	<i>Can.</i>	Physiology	<i>Physiol.</i>
Character	<i>Charac.</i>	Proceedings	<i>Proc.</i>
Children	<i>Child.</i>	Psychiatry	<i>Psychiat.</i>
Chinese	<i>Chin.</i>	Psychoanalysis	<i>Psychoanal.</i>
Clinical	<i>Clin.</i>	Psychology	<i>Psychol.</i>
College	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
Comparative	<i>Comp.</i>	Quarterly	<i>Quart.</i>
Consulting	<i>Consult.</i>	Religious	<i>Relig.</i>
Contributions	<i>Contrib.</i>	Research	<i>Res.</i>
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General	<i>Gen.</i>	Social	<i>Soc.</i>
Genetic	<i>Genet.</i>	Statistics	<i>Stat.</i>
Indian	<i>Ind.</i>	Studies	<i>Stud.</i>
Industrial	<i>Indus.</i>	Teacher	<i>Teach.</i>
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THE UTILITY OF VERBAL MODELS IN CHANGING SELF-ESTEEM OF INSTITUTIONALIZED THAI AND AMERICAN ADOLESCENTS*

Chulalongkorn University

PUNTHIP BEKANAN, GARY L. SAPP, AND TEWIN NOISUWANE

SUMMARY

The study appraised the effects of four independent variables—nationality, age of verbal model, sex of verbal model, and age of subject—on changes in level of self-esteem. Two hundred and forty institutionalized adolescents, 120 Thai and 120 American, served as Ss. Treatment implementation involved exposing the Ss to positive self-descriptive paragraphs and a positively scored Self-Esteem Scale purportedly completed by an imaginary pen pal. Ss then wrote a self-descriptive paragraph for the pen pal. Pretest-posttest change scores were analyzed in a $2 \times 3 \times 2 \times 2$ ANOVA. Thai Ss gained significantly more than American Ss, and significant interactions for nationality by age of model, and sex of verbal model by age of S were obtained.

A. INTRODUCTION

Cross-cultural studies that deal with the self-concept construct are few. One such study (12) compared the self-concepts of American and Thai high school students as measured by the Tennessee Self-Concept Scale (5). The TSCS was carefully translated, validated, and administered to groups of college-bound and noncollege students in both cultures. While significant differences between subscores were obtained, the total positive score of the two groups was not significantly different. Thus, there is limited evidence that the self-concept construct may be measured and compared across cultures. A review of the Thai literature for the last 10 years revealed no experimental studies that attempted to manipulate level of self-concept.

Orphaned children who reside in child care institutions would appear to be particularly susceptible to the debilitating environmental conditions that produce reduced levels of self-esteem. While it is inappropriate to make broad generalizations about the effects of institutionalization, it appears that physi-

* Received in the Editorial Office, Provincetown, Massachusetts, on July 9, 1974, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1975, by The Journal Press.

cal and emotional deprivation may often be accompanying factors. When compared with children from intact families, institutionalized children were more alienated (4), did not develop strong emotional attachments (13), and evidenced a lack of emotion which was described as prepsychopathic (3).

A question of obvious significance is to determine the most efficient way to increase the level of self-esteem of institutionalized children. Bandura (1) described the application of principles of social learning theory in modifying a variety of behavior classes: e.g., level of self-reinforcement, moral judgment orientations, and conceptual behavior. Although few studies using social learning principles have systematically assessed affective changes, recent research indicates that exposure to modeling procedures can have affective consequences. Bishop (2) found that seventh grade, public school students rated themselves significantly higher on self-esteem after reading positive self-descriptive comments of a verbal model. Gergen and Morse (7) similarly demonstrated that self-esteem was higher after exposure to a positive stimulus person. Conversely, self-esteem was lower after exposure to a negative stimulus person.

The reported effectiveness of modeling procedures in modifying a variety of behaviors suggested further application in the present study. Thus, the major purposes of this study were, first, to examine changes in self-esteem of institutionalized adolescents as a function of exposure to a positive verbal model and, second, to compare the efficacy of the experimental procedure across two cultures, Thai and American.

The major null hypothesis to be tested was as follows: The nationality and age of the Ss and the age and sex of the verbal model will not produce significantly different degrees of change in level of self-esteem.

B. METHOD

1. *Subjects*

Participating Ss were 240 institutionalized children, 120 American and 120 Thai. The American Ss were randomly selected, with restrictions, from the adolescent population of a church-sponsored children's home. Ss were selected by age and sex (i.e., 30 males and 30 females, ages 12-14, and a comparable group, ages 15-17). The Ss lived in small groups in cottages located on a large, rural campus. Groups of 15-20 Ss of both sexes were supervised by two houseparents. Residents of the home were lower-middle-class Caucasians living in a Southeastern state.

The Thai Ss were randomly selected, with restrictions, from the populations

of two child care institutions (one for males, one for females) located in Bangkok, Thailand. They were randomly selected as above (i.e., restricted by age and sex—30 males and 30 females in each age group, 12-14 and 15-17). The homes, administered by the Thai Government, contained children from relatively impoverished environments. Living conditions were austere, although not too dissimilar from the majority of Thai people. Ss lived in groups of 20 and were supervised by two female houseparents.

2. Instrumentation

Ss' responses to Parts Two, Three, and Four of the Self-Esteem Scale (11) served as the dependent variable. The scale is a combination questionnaire and rating scale which is designed to yield a numerical score that represents levels of self-esteem. Since the function of Part One is largely to gather background information, it was not employed in this study.

Part Two is a series of 30 items, answered yes or no, that purport to measure stated likes and dislikes of the respondent. Part Three is a 10-item Guttman-type scale that measures the degree to which the S's self-image is positive or negative. Part Four is a 22-item, five-choice rating scale which is designed to measure level of acknowledged self-concept. The scale is based on the supposition (9) that a person who admits his inadequacy and inferiority has a low self-concept.

Reliability of the total scale was reported by Rubin (11) as .88 (test-retest). He also found some support for construct validity by comparing Ss' responses on the scale to those on a questionnaire designed to obtain self-referential information. The scale was tested for English-Thai equivalence by administering the English version to 30 Thai sophomore education majors attending a major university in Bangkok. One month later the Thai translation was administered. A reliability coefficient of .88 was obtained.

3. Procedure

The study was conducted in America in the Spring of 1973 and in Thailand in the Fall. The experimental sequence was as follows: (a) administration of the Self-Esteem Scale, (b) exposure to treatment conditions, and (c) re-administration of the scale. Prior to experimental implementation, the scale was administered to all Ss in the respective institutions. No explanation was given regarding the reason for the test. After one month, the respective Ss were randomly assigned, with restrictions, to six experimental groups. A separate control group was omitted, as the number of Es was limited, and it

seemed preferable to expose all of the *Ss* in the respective samples to experimental treatment on the same day.

The *Ss* were divided into six groups of 20 each and met with the *E* who was accompanied by one of the authors. Experimental sessions were approximately 30 minutes long. For American *Ss*, the *E* was a female houseparent trained to administer the experiment. *Ss* were told that a visitor from Thailand had come to tell them something about her country and to find out something about them. To help them better understand she had brought letters (paragraphs) that could have been written by a Thai person, and a test purportedly completed by them. They were to read carefully the paragraphs and the scale and then write a self-descriptive paragraph for the pen pal. For Thai *Ss*, the *E* was a male graduate student in Psychology. *Ss* were told that a teacher at Chulalongkorn University wanted to tell them about America and find out something about them. The stimulus materials were presented just as they had been to the American *Ss*.

The descriptive paragraphs, developed for application in a related study by Bishop (2), represented self-evaluative statements of a male and female, each in three life stages: an adolescent, age 13; an adult, age 40; and an elderly person, age 75. The paragraphs, approximately 100 words in length, were written in the first person. The writers were very positive about their daily existence and described themselves as being popular, socially involved, physically active, and enjoying life at its best. The accompanying Self-Esteem Scale was rated very positively.

The six paragraphs were presented to the *Ss* as follows: group one, adolescent of the same sex; group two, adolescent of the opposite sex; group three, adult of the same sex; group four, adult of the opposite sex; group five, elderly person of the same sex; group six, elderly person of the opposite sex. To heighten the realism of the experiment, the *Ss* were encouraged to write a self-descriptive paragraph for the pen pal. These paragraphs served as an informal check on the validity of the Self-Esteem Scale. Upon completion of the treatment, the Self-Esteem Scale was immediately readministered to the *Ss*.

C. RESULTS

The effects of the specific independent variables on the Self-Esteem Scale change scores were compared in a $2 \times 3 \times 2 \times 2$ factorial-design analysis of variance. Primary factors were A, nationality (Thai or American); B, age

of verbal model (adolescent, adult, or elderly adult); C, sex of verbal model (either same or opposite that of the S); and D, age of subject (12-14 or 15-17). Results indicate that Thai Ss demonstrated significantly greater gains in self-esteem than did American Ss ($F = 31.1$; $df = 1/216$, $p < .01$). Thus the null hypothesis, that nationality and age of the Ss and the age and sex of the verbal model will not produce significantly different degrees of change in level of self-esteem, was rejected. No significant differences for the other factors were obtained.

Two interaction terms, nationality by age of verbal models ($A \times B$) and sex of verbal model by age of subject ($C \times D$), were found to be significant. A subsequent analysis of the simple main effects for the $A \times B$ interaction indicated that the Thai Ss demonstrated significantly more positive change as a function of the age of the verbal model ($F = 8.557$; $df = 2/216$, $p < .01$). Further probing with the use of the Neuman-Keuls test for multiple comparisons indicated that the adolescent verbal model produced significantly higher scores for Thai Ss than did the other verbal models. For the American Ss the trend was just the opposite. While the means were not significantly different, the order ranged from low for the adolescent verbal model to high for the older adult model.

A comparable analysis of the simple main effects for the $C \times D$ interaction indicated that younger Ss gained significantly from pre-to posttest after exposure to verbal models of the same sex. However older Ss gained more after exposure to Ss of the opposite sex.

D. DISCUSSION

The results of this study corroborate the findings of a related study (2) which indicates that exposure to positive statements of verbal models can increase level of self-esteem in selected experimental settings. However, the interaction of nationality and age of verbal models makes it hazardous to affirm the efficacy of any particular factor-level combination in producing change in other experimental settings.

An unexpected finding was the significantly greater gain in self-esteem scores by the Thai Ss. While the phenomenon of regression toward the mean is a plausible explanation, it would appear to be somewhat tenuous. Comparison of the pretest group means revealed that while the mean for the Thai Ss was higher, the difference was not significant. A more probable reason concerns the social environment in which the Thai Ss resided. Within the institution,

group solidarity was strong. Disruptive residents were rapidly removed to other, more sordid settings. A strong cultural bias of group functioning and cooperation was reflected in the daily regimen of the Ss.

In contrast, the American Ss were exposed to social influences that militated against the development of strong feelings of group membership. They were not denied feedback from the surrounding environment but could easily observe differences in life styles between themselves and their peers. The administration of the home allowed Ss to visit extensively with selected families at various holiday periods. These families informally adopted the Ss and often developed strong emotional ties to them. While these relationships were beneficial to the few Ss that enjoyed them, some negative effects were produced. The privileged Ss were further sensitized to their relatively deprived living conditions, and the uninvited Ss were resentful of those who were chosen.

Another significant finding was the degree to which the Thai Ss imitated the adolescent verbal model, whereas the American Ss imitated this particular model least. The rationale underlying Bandura's modeling paradigm predicts that an S is more likely to imitate a model that he perceives as being similar to himself than one he perceives as dissimilar. One possible explanation for this finding may be the characteristics of the *Es* themselves. For the Thai Ss, the *E* was a graduate student trained to administer the experiment. For the American Ss, the *Es* were houseparents, all of whom were females over 30. It is conceivable that the Ss used the *Es* as actual models and thus tended to bias their response toward the respective verbal models.

A second possibility concerns the nature of the relationship between the Thai Ss and their houseparents. The mores of the Thai culture place great emphasis upon respect of youth for its elders. Older people are not expected to have a great deal of concern for the problems of youth. Observation of behavioral interactions between the Ss and their houseparents indicated that relationships were not warm and fraternal. Ss appeared to demonstrate behavior similar to that reported by Freud (6) in which orphaned children developed strong interpersonal attachments to each other but few with adults.

A more puzzling enigma concerns the reasons why the American Ss identified more strongly with adults than with adolescent. This finding is in opposition to a great deal of research which indicates the potency of contemporary youth culture (10). However, Lipitt and his colleagues in a series of field studies (8) indicated that the major sources of imitative behavior for group members are those persons to whom high social power is attributed. The Ss

could be described as powerless members of a larger group. Indeed, they had little autonomy over any major area of their lives as the home was not administered on a democratic basis. The responses of the Ss could simply be an overt reflection of their realization that they lacked social power to any meaningful degree.

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SEMANTICS AND STRUCTURE: A COMPARISON
BETWEEN MONOLINGUAL AND
BILINGUAL SUBJECTS*

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SUMMARY

Twenty English-speaking monolinguals and 20 French-American bilinguals were given 11 words to encode in order to obtain certain measures of codability: latency, reaction time, number of words, number of syllables, and interpersonal agreement. In addition, the semantic differential was administered in order to obtain an indication of meaning intensity. Although the classical coding measures correlated with each other in expected directions for both groups, intensity of meaning was inversely correlated with the coding measures only for the monolingual group. For the bilinguals, intensity was directly related to the coding measures. The results imply that although coding measures do hold up between groups, they may mean different things. Words that have intense meaning for bilinguals may be those that elicit a host of associations; while for monolinguals, the most semantically intense words elicit few associations.

A. INTRODUCTION

The construct of codability refers to the facility with which a stimulus can be translated into verbal symbols. Codability has been operationally defined by a series of structural measures, such as number of words and syllables that comprise a response, reaction times, and interpersonal agreement. A number of different studies (1, 12, 13) have found strong intercorrelations among several of these measures.

Most of the work in this area has dealt with stimuli which can be ordered along physical dimensions. Lenneberg (6) introduced the idea that the color continuum could be employed as a stimulus array for assessing codability, and Brown and Lenneberg (1) found that those colors which were more easily coded were more easily discriminated. The generalizability of Brown and

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Lenneberg's original study has been explored further by Lenneberg (7); and van De Geer and Frijda (13) found similar results using faces instead of colors. However, there have been some exceptions to the above findings. Burnham and Clark (2), using the same methodological procedure as Brown and Lenneberg (1) but a different color spectrum, obtained negative correlations between discrimination and their measures of codability, a finding opposite to that of Brown and Lenneberg.

Practically all of the research on codability has employed concrete stimulus dimensions, such as colors and faces. In the same sense that the codability of a physical stimulus can be defined by structural measures, the codability of verbal stimuli may also be able to be defined by structural measures. It might be possible to show that if verbal stimuli are given to a subject, measures of codability for those stimuli will show the same pattern of relationships as the measures of codability for physical stimuli.

Since the measures of codability have been purely structural, little is known about how these measures would relate to dimensions of meaning as reflected, for example, in semantic differential ratings. Since Osgood, Suci, and Tannenbaum (9) have conceptually represented those words holding more extreme semantic differential ratings as those most engrained in an individual's mediational space, it was expected that verbal stimuli which were highly codable in structural terms would show more intensive semantic differential ratings. That is, it was believed that those words which were central to an individual and thus highly intense would be those which could be most easily coded.

It has also been noted (3, 4) that meanings which individuals have for concepts are determined by situational or cultural factors. For example, it has been found that instructions designed to create situational sets produced varying factor patterns for semantic differential scales (10). In terms of cultural factors, Steffire, Vales, and Morely (11) found that members of two different language groups showed differential communication accuracy for different colors and Lenneberg and Roberts (8) found that monolingual and bilingual Zuni subjects showed differential coding of the color spectrum.

Since colors have been shown to be highly codable by one language group and not by a second, it has been believed that the same phenomenon might occur for verbal stimuli. Thus, the present study employed a monolingual English-speaking group and a bilingual group whose dominant language was French. If cultural differences do affect structure and meaning, then both patterns of relationships, among the structural and between the semantic and structural measures, may differ for the two groups.

It appears, then, that three questions must be asked about coding measures. First, do the measures hold across different stimulus arrays from those originally studied? Specifically, rather than relying upon physical stimulus dimensions, will the relationships between coding measures hold if subjects are asked to encode messages related to concept meaning? Second, do cultural factors alter these measures? Specifically, are correlational trends for monolinguals similar to those for bilinguals? Third, can a relationship be found between structure, as reflected by such measures as word frequency and reaction time, and semantics or meaning, as exemplified by intensity of response on the semantic differential?

B. METHOD

1. *Subjects*

Two groups of subjects were used. The first group, referred to henceforth as monolingual, included 10 male and 10 female upperclassmen enrolled in a special seminar at the University of Maine. Nine male and 11 female French-American bilingual upperclassmen, enrolled in another special seminar, composed the second group. For all bilinguals, French was the dominant language and English the recessive, while for monolinguals English was the only language.

2. *Stimulus Materials*

The stimuli employed consisted of 11 English words: six nouns, two adjectives, and three verbs. The words were selected by judges as exhibiting no special connotative significance for either group. Five experts in the field (language arts instructors who taught both bilingual and monolingual students) supplied the authors with lists of words that either (*a*) possessed equal connotative significance for both groups or (*b*) possessed special difficulty for the French-American bilinguals. Those words in category *a* which the judges most frequently possessed no distinguishing significance for either group were utilized.

3. *Procedure*

The first part of the study was devoted to the collection of data relevant to the four measures of codability posited by Brown and Lenneberg (1). These included reaction time (the time taken during the naming response), interpersonal agreement (the degree to which subjects used similar explicatory processes), number of words, and number of syllables. In addition, latency of

response (time from presentation of stimulus concept until subject's utterance) was suggested as another measure of codability by the authors.

Following Lantz and Steffire (5), subjects were then asked to encode their responses for transmission to others. The following instructions were administered to each subject:

I am going to show you a word written on a plain piece of paper. Immediately upon showing you this word I will pronounce the word out loud. Upon hearing the word I would like you to explain the meaning of the word to me as if you were attempting to explain its meaning to a friend. You may take as much time as you like, and use as many or as few words as you deem necessary. If you are totally unfamiliar with the meaning of a word, simply inform me of this fact and we will proceed on to the next word. Are there any questions?

All subjects were tested individually, in random order, and all sessions were inconspicuously taped. Thus, accurate assessments of the various measures of codability would be obtained.

The semantic differential was administered to all subjects in a group session two weeks after the final subject was tested, supplying the sixth, and final measure of codability.

C. RESULTS

1. *Measures*

Quantification of the first three measures was rather simple and identical with the procedure used by Brown and Lenneberg (1). Number of words and syllables used in the naming process was determined by a simple counting procedure; and reaction time and latency were measured in seconds. Since the naming responses were syntactically more complex than those produced in Brown and Lenneberg's experiment, because of the conceptual nature of the stimuli in the present study, the measure of interpersonal agreement was modified slightly. Where single words served as the response unit in Brown's study, phrases and even sentences which composed complete thoughts were used as the response units in the present study. In this manner, Brown's following formulation was employed: number of different responses to a particular stimulus subtracted from the number of subjects who agreed on a particular response, plus a constant in order to make all scores positive. Thus, high scores indicated high agreement among subjects on the definitions of stimulus words.

Intensity of response was measured by summing the absolute values on the semantic differential for each word separately. Thus on each dimension of the semantic differential, a concept was scored from "0" to "3."

2. *Correlations Between Coding Measures*

Mean scores were obtained for each measure across subjects for each stimulus word. In other words, a mean score was calculated for all 20 subjects' responses on each word, yielding six coding scores for each of the 11 stimulus words. Following the method suggested by Brown and Lenneberg (1), correlation coefficients were computed between each of the coding measures for each of the language groups and are reported in Table 1.

For the monolingual group, there were significant correlations between latency and reaction time ($.60, p < .05$); number of syllables used and reaction time ($.70, p < .05$); number of words and number of syllables ($.91, p < .01$); interpersonal agreement and reaction time ($-.60, p < .05$); intensity of meaning and number of words ($-.62, p < .05$); and intensity of meaning and reaction time ($-.70, p < .05$).

For the bilingual group, significant correlations were found between reaction time and latency ($.81, p < .01$); number of syllables and reaction time ($.62, p < .05$); number of words and number of syllables ($.79, p < .01$); interpersonal agreement and reaction time ($-.69, p < .05$); interpersonal agreement and latency ($-.70, p < .05$); intensity of meaning and number of words ($.60, p < .05$); and intensity of meaning and number of syllables ($.69, p < .05$).

3. *Differences Between Groups*

In order to test for differences between the monolingual and bilingual groups, *t* tests were computed between the group means for each coding measure. Following the procedure employed in obtaining the correlational data, scores were calculated for each stimulus word by averaging all subjects' responses for that word and entering those means into the analysis. The tests were conducted for all measures except interpersonal agreement, which was not suitable because the index it represented was not a summation of subjects' scores for each concept. No significant differences were found between the means and standard deviations for each of the remaining five measures. In fact, scores for the groups were quite similar. For example, latency means for the monolingual and bilingual groups were 3.70 and 3.65, respectively, and means for the intensity measure were 2.05 and 2.25, respectively. The corresponding standard deviations were 1.46 and 1.19 for latency, and .41 and .49 for intensity.

TABLE 1
CORRELATION MATRIX FOR SIX MEASURES OF CODABILITY:
MONOLINGUAL AND BILINGUAL GROUPS

Variables	Meaning intensity		Number of words		Number of syllables		Reaction time		Latency	
	M	B	M	B	M	B	M	B	M	B
Interpersonal agreement	.15	-.49	.12	-.23	-.19	-.48	-.60*	-.69*	-.45	-.70*
Meaning intensity			-.62*	.60*	-.40	.69*	-.70*	.22	.14	.09
Number of words					.91**	.79**	.48	.28	.40	.31
Number of syllables							.70*	.62*	.33	.46
Reaction time									.60*	.81**

Note: M = Monolingual; B = Bilingual, $df = 10$.

* $p < .05$.

** $p < .01$.

D. DISCUSSION

The finding that all differences between measures were nonsignificant is important conceptually, as well as statistically. Since there were no differences between groups on means and standard deviations of the coding measures, any variation between groups in the relationships among coding measures (as represented in the correlation matrices) was not attributable to artifactual effects stemming from the differences between mean scores between the groups, and only served to heighten the conceptual implications of any differences found in the correlation matrices.

For both groups, all significant correlations were in the predicted directions for those structural coding measures previously cited. For the bilingual group, as well as the monolingual, reaction time was negatively correlated with interpersonal agreement. In addition, interpersonal agreement was also negatively correlated with latency of response for the bilingual group. The implication here may hinge upon the idea of "shared meanings"; that is, strong communicative norms pertaining to particular perceptual areas lead to easy coding: i.e., accurate transmission (e.g., "I know what you're talking about"). This idea becomes intelligible if we view language and its relation to group standards as functional. Those concepts most readily used by the group will be those, through an evolution of functional utility, that will be most easily coded, as opposed to those that are not functional and eventually dropped off into cognitive obscurity. Thus, in our paradigm, those words most readily agreed upon by given group members will elicit shorter reaction times, and in the case of the bilingual group, shorter latencies as well.

For both groups, the number of syllables was correlated positively with reaction time and number of words. Thus the more involved the explicatory process, in terms of syllables and words, the longer that same process. In fact, the syllable measure was originally obtained to assess whether the monolinguals used longer and more sophisticated words than the bilingual group. No such difference was found. Latency was found to correlate positively with reaction time in both groups. The amount of mediational time required to respond to a particular stimulus word may be indicative of the length of the oncoming explicatory process.

For the monolingual group, intensity of response was negatively correlated with the number of words used in the coding process and reaction time. This appears to be consistent with Osgood's finding of a negative relationship between extremity of response on the semantic differential and latency of re-

sponse. The greater the number of words used in the explicatory process, and the greater the time used in that same process, the less extreme the position occupied by the concept on the semantic differential. Thus the implication is that extremity of response is in some way an indicator or predictor of the operationalization of that word.

For the bilingual group, however, intensity of response was directly related to number of words and syllables used in the coding process. Here, the greater the number of words used in the explicatory process, the greater the extremity of response. Since Osgood *et al.* (9) have reported no consistent differences among cultural groups in responding to the semantic differential, the differences obtained among groups might be a function of the socialization and learning processes that the bilingual is subjected to when learning a second language. It appears that the acquisition of a second language depends primarily upon the attachment of verbal meanings to other verbal assigns, to use Osgood's term. Connections between stimulus and response are mediated not through the "real" world, but rather through other more linguistic stimuli. That is, when a child originally learns the word for "dog," the connection is established between a real dog, or a picture of a dog, and the word "dog." However, when a child is learning a second language, connections are usually established between the already learned verbal signs and other verbalizations (the new words to be learned). Often the original significant is totally obscured. Discrimination hinges upon "information," but not necessarily primary information about the world at large. Rather, the information that breaks through and mediates is mostly verbal in nature and not necessarily connected with any physical symbolism. In the learning of a second language, information is a function of other information.

Perhaps it can be hypothesized that the greater the amount of verbal storage that an individual has for a given concept (under the above second-language conditions), the stronger will that concept be in his repertoire. This appears to be the case with the bilingual subjects. Those concepts for which there are longer and more involved explicatory processes gave rise to more impacted, intense meanings. Therefore, the more verbal attachments that, for example, a bilingual has for any given number of concepts, the more usable those concepts.

From the evidence obtained in the present study, it may be argued that codability as a construct is not stable or unidimensional but rather subject to situational forces. While we can readily see that the coding measures do

function together, it might also be posited that codability may actually mean two different things depending upon the language group under examination. For instance, in our bilingual group, although coding measures were all in the expected directions, our results may indicate that easily coded words are not characterized by the same attributes as are easily coded words for monolingual groups. Thus, a word strong in intent and meaning for a bilingual may have many verbal attachments paired with it; while for the monolingual word may have relatively few other verbal referents. The basis of this can be seen in the translation of poetry, in which the esoteric transmission of "meaning" which the author wishes to convey acts as a deterrent to translation. Most translators cannot capture the real meaning (if such a term can in fact be used) of the poem.

When a bilingual uses a word for which he has many associations, we may regard that word as more easily usable or codable. Most often, however, writers have contended that when we have brief, impact attachments to particular words, we are dealing with concepts that are rather readily usable. According to present findings, this may only hold true for groups which possess one dominant language. For multilingual groups, coding measures, although all too apparent as constructs, may be operationalized and used in opposite fashions.

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AGE AND SEX DIFFERENCES IN THE VOCATIONAL ASPIRATIONS OF ELEMENTARY SCHOOL CHILDREN*¹

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SUMMARY

Four hypotheses were proposed: (a) boys would aspire to a greater variety of vocations than girls; (b) boys would change their vocational preferences more frequently than girls; (c) older boys would aspire to a broader range of vocations than younger boys; and (d) older girls would aspire to a similar or smaller range of vocations than younger girls. A total of 128 6- and 8-year-old Dutch boys and girls responded to questions concerning their vocational aspirations. All the hypotheses except (b) received support. The results suggested that sex-role expectations for adult occupations are acquired very early and, moreover, strongly circumscribe the range of vocations perceived as appropriate for females.

A. INTRODUCTION

Loofst (3, 4) has reported interesting findings concerning the vocational aspirations of first and second grade children in the United States. Even at this age, young girls aspired to sex-role stereotyped vocations and, moreover, perceived far fewer vocational possibilities than did young boys. Boys were also more likely than girls to change their vocational preferences, supporting the notion that occupational "foreclosure" may occur earlier among girls (4).

One might speculate that the constraining influence of sex-role expectations on females' vocational choices is even stronger in The Netherlands than in the U.S. Although feminist groups are increasingly active in The Netherlands, their influence is limited, especially outside the large metropolitan areas. The notion that the place of women, particularly married women, is in the home is

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very prevalent. While 25.8% of all women over the age of 15 hold jobs in The Netherlands, only 16% of married women do so (6). Employment figures are not available for married women with children, but these percentages appear to be very low. Moreover, women who are employed generally hold unskilled, poorly paid positions: only 20% of Dutch women between the ages of 20 and 65 have completed any form of occupational training (7).

This situation has potentially important implications for the vocational aspirations of children, especially girls. It seems likely that children's expectations concerning female abilities and vocational alternatives will be strongly influenced by exposure to available feminine career models: in The Netherlands, such persons are not only few in number but, in addition, almost invariably occupy low status positions. Moreover, recent studies in the U.S. (2, 9) have suggested that nonworking mothers, in contrast to working mothers, tend to reinforce stereotyped and negative attitudes toward female competence in their children. In view of these factors, it was expected that Looft's findings would be strongly confirmed in a Dutch sample.

Another purpose of the present study was to examine children's vocational aspirations for age differences: it might be hypothesized that, as children mature, acquiring more information about possible vocations and related sex-role expectations, boys will perceive an ever increasing array of job possibilities for themselves, while girls may experience only a small increase, or perhaps even a decrease, in the perceived range of appropriate vocations.

B. METHOD

The sample consisted of 64 boys and 64 girls, drawn equally from the first and third grades of two public schools situated in a residential suburb of Nijmegen, The Netherlands. All the children were white and came from lower-middle to middle-middle class homes. Ages of the children ranged from 6.0 to 7.5 years among the first-graders, and from 8.0 to 9.5 years among the third-graders. It should be noted that samples in the Looft studies were drawn from Roman Catholic parochial schools in the United States; however, the social class and racial backgrounds of these children were not reported.

Each child was interviewed individually by a male assistant in a separate room of the school. As in the Looft studies, the child was informally asked, "What would you like to be when you grow up?" Following this, the child was asked, "Do you think you really will be a ——— when you grow up?" If the child said "no," he was then asked what he really would be. The aim of the second question was to determine the child's certainty in his choice and, indirectly, to see whether he differentiated what he wanted to be from

what he expected to be. The phrasing of this question differs from that used by Looft: "What do you think you really will be when you are an adult?" In pilot work for the present study, it was discovered that most children did not perceive a difference between the two questions used by Looft.

C. RESULTS

In response to the question, "What would you like to be when you grow up?" boys in the first grade nominated a total of 14 different occupations, while girls in this group gave 10 (only first choices were counted). Third grade boys named 19 different occupations, while girls in this group named just 10. These findings confirm Looft's results and support the prediction concerning age differences.

Among first grade boys, the most popular choice was policeman (eight), followed by auto mechanic (three), soldier (two), doctor (two), and carpenter (two). Nine occupations (e.g., father, bus driver, veterinarian) received one vote each, while six boys didn't know what they wanted to be.

First grade girls opted for nurse (nine), teacher (six), and mother (four). Seven occupations (e.g., doctor, saleslady, baker) received one vote each; six girls didn't know what they wanted to be.

Third grade boys chose policeman (five), football player (three), fireman (three), gym teacher (two), and carpenter (two). Fourteen occupations were nominated just once, revealing diverse preferences (e.g., violinist, clown, sculptor). Three boys didn't know what they wanted to be.

Third grade girls, like the younger girls, expressed strong preferences for nursing (9) and teaching (8), which accounted for 53% of their choices. Less popular were saleslady (three), child minder (two), and hairdresser (two). Five occupations received one nomination (e.g., housewife, seamstress, policeman). Three girls didn't know what they wanted to be.

Responses to the second question, "Do you think you really will be a _____ when you grow up?" can be viewed from two perspectives: (a) the child's certainty that he will become what he *wants* to be (i.e., whether or not he confirmed his original preference); and (b) the child's certainty that he will attain some particular vocation, whether desired or not (i.e., whether or not he responded with any vocational alternative).

For the first point of view, children who confirmed their original choice were distinguished from those who either changed, or expressed uncertainty about, their original preference. Among first graders, 37 expressed certainty concerning their original choice, while 27 were either uncertain or said they would be something else. Among third graders, these proportions were re-

versed: 27 expressed certainty, while 37 were uncertain or changed their initial choice. This tendency for younger children to express greater certainty about becoming what they wanted to be, did not, however, reach significance ($X^2 = 2.53$, $df = 1$, $p < .12$). No sex differences emerged on this question.

To determine differences in the children's certainty about attaining some particular occupation, those who changed (and thus chose another vocation) or who confirmed their initial response were grouped together and distinguished from children who expressed uncertainty about what they really would be. The younger children expressed greater certainty about attaining a specific occupation than did the older children ($X^2 = 3.93$, $df = 1$, $p < .05$). In the younger group 44 children expressed certainty, while 20 were uncertain; the older group was evenly divided between certainty (32 children) and uncertainty (32 children). Again, no sex differences occurred.

D. DISCUSSION

With increasing age, boys perceived their job perspectives as broadening, while girls did not. As in Looft's studies (3, 4), the girls responded with just a few vocational alternatives, primarily nursing and teaching. These data support the notion that children, especially girls, learn sex-role expectations for adult occupations very early, long before real vocational decisions have to be made.

While young Dutch and American girls apparently share the same job aspirations, their male counterparts do not. Although Dutch boys responded with diverse job possibilities, just as the American boys did, the kinds of occupations aspired to appeared qualitatively different. The choices of Dutch boys might be characterized as less prestigious but, perhaps, more realistic. Only three of the 66 first choices made by Dutch boys represented high prestige occupations in Holland (8). None of the boys wanted to become a scientist, engineer, general, dentist, or judge. It may be that young Dutch boys are less acquainted with high prestige occupations, particularly scientific vocations, than are U.S. boys, or perhaps they experience less pressure to aspire to highly esteemed occupations. On the other hand, the possibility that social class differences between the American and Dutch samples account for the contrasting aspirations cannot, in the absence of information about the American boys, be ruled out.

No sex differences emerged on certainty about becoming what one either wanted or expected to be. This was somewhat surprising in view of Looft's finding that boys frequently changed their original preferences, while girls did not.

With increasing age, both boys and girls in the present study became less certain about what they would become. Whether the same factors underlie the increased uncertainty of both sexes is not clear: uncertainty was associated with heightened awareness of vocational possibilities among boys but not among girls. It might be conjectured that for boys, uncertainty about one's future vocation may largely reflect the difficulty of deciding among so many desirable alternatives, while for girls uncertainty may derive from increasing awareness that a career may never materialize. Ås (1) has reported that adolescent girls who were indecisive about choosing a career tended to focus on difficulties related to combining a career with possible marriage and children.

Minuchin (5) found that children from homes and schools stressing individualized development displayed less conventional sex-role attitudes and behaviors than did children from more traditional backgrounds. These results suggest that comparisons of the vocational aspirations of boys and girls enrolled in different educational settings (e.g., traditional, Montessori) might prove interesting. If certain educational environments do foster more liberal attitudes concerning sex roles, one might expect such flexibility to be reflected in the vocational aspirations of the children involved.

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MACHIAVELLIANISM AMONG TRADITIONAL AND WESTERNIZED ARAB STUDENTS*¹

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SUMMARY

Although several observers have attributed to the Arabs some qualities quite like the constellation of personality characteristics which Christie and Geis have termed "Machiavellianism," such descriptions have rarely been empirically investigated. The present study compares Arab and American responses to the Mach IV Scale. There was no significant difference between Arab and American male respondents; the image of the Arab male as being more Machiavellian than his American counterpart was not supported. Although the Arabs scored significantly higher than the Americans when sex differences were not considered, the overall difference was essentially due to the higher scores of the Arab females in comparison with the American females. Contrary to the findings of previous studies conducted in other cultural settings, no significant differences were observed between Arab males and females, between traditional and more Westernized respondents or among those from large cities, small cities, or villages.

A. INTRODUCTION

In her often cited and very provocative study of the "Arab character" Hamady contends that Arabs, in implicit comparison with Westerners, generally tend to be dishonest and feign humility in order to gain an objective, to be distrustful of others (10, p. 36), to possess an aptitude for undermining one another's reputations (10, p. 51), to mask genuine sentiments and seek to mislead their audience for personal gain (10, pp. 57-59), to shift allegiances and affiliations to gain an advantage (10, p. 68), and to disclose little of themselves to others while maintaining a sense of superiority (10, p. 60).

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Although such statements may appear demeaning to Arabs, particularly to social scientists with experience in the Middle East, other observers have provided similar descriptions. A tendency to put forth a false self which masks genuine feelings has also been noted by Khatchadourian (11) and a strongly suspicious and distrustful attitude toward others has been attributed to Arabs in other scholarly writings (1, 6, 7).

In his review of many writings on the personality characteristics of the Arabs, Berger (3, pp. 134-165) also notes that Arabs are often described as secretive, tending to denigrate others (particularly in competitive situations), and as being egocentric, holding fiercely to their own opinions while desiring to impose them upon persons around them and resorting to intrigue against those who disagree. Racy (20) and Beit-Hallahmi (2) have more recently summarized these descriptions.

While these studies are primarily based upon anecdotal evidence and personal observations, they often agree on a number of characteristics, most of them quite negative. Such attributes appear to support several of the negative Western stereotypes of the Arabs. The validity of such impressions, however, has received relatively little attention by social scientists. Aside from the work of Melikian and Prothro (12, 13, 14, 15, 17, 18, 19) few systematic psychological studies of Arab personality characteristics have been accomplished.

Most discussions of the personality characteristics of the Arabs have been, explicitly or implicitly, primarily concerned with the Arab male. Although some studies have been made of women in the Middle East (8), this sex has received much less attention, perhaps due to male researchers' more limited access to female subjects.

Some of the qualities attributed to the Arabs are quite like that constellation of personality characteristics which Christie and Geis (4, 5, 9) have termed "Machiavellianism," a tendency for an individual to view others as objects to be manipulated, to have instrumentalist and utilitarian rather than "moral" views of their interaction with others, and a tendency to be more involved in tactics for achieving ends than in the inflexible striving for ultimate idealistic goals. Although none of those attempting to describe one cluster of the personality characteristics of the Arabs have used the term, "Machiavellian" would seem to aptly describe some of the hypothetical attributes of the Arabs. Drawing upon such descriptions, the present study is an attempt to test the hypothesis that Arab respondents would tend to be more Machiavellian than those from another culture and to determine if some of the social factors which have been associated with Machiavellianism in studies in other cultures are supported with data from an Arab society.

While the writings on the personality tendencies of the Arabs would support the contention that those Arabs with a more traditional background would tend to be more Machiavellian than those with more Western experience, Oskenberg (16) found the reverse to be true for Chinese subjects in Hong Kong. In her study, the traditional subjects manifested significantly less Machiavellianism than did Westernized subjects. The present study, while recognizing the somewhat arbitrary distinctions made between "traditional" and "modern" or "Westernized" groups, will also consider this problem.

Drawing upon the observations discussed and the empirical work by researchers in other cultural contexts, the following hypotheses have been tested:

1. As a group, Arabs tend to manifest significantly greater Machiavellianism than a comparable group of Westerners.
2. Among the Arabs, those with a traditional background manifest greater Machiavellianism than those with a more Western background.
3. Among the Arabs, those with urban backgrounds tend to manifest greater Machiavellianism than those with rural backgrounds (5, pp. 318-19; pp. 71-2).
4. Among the Arabs, males tend to manifest greater Machiavellianism than females (5, p. 32).

B. METHOD

A Mach IV Scale questionnaire (5, pp. 17-18) with a background data sheet was administered to students at the American University of Beirut (AUB) and at two government colleges in a small Lebanese city. The original questionnaire was screened for cultural inconsistencies beforehand in cooperation with faculty members and graduate students familiar with the cultural background of the Middle East.²

An Arabic translation of the English language scale was made, employing back-translation procedures, with the assistance of four bilingual native speakers of Arabic, two of whom were secondary school teachers of English.³ In pretests of each version students were asked to point out any word or expression they did not understand. A test-retest of both versions of the scale administered, first in English and then Arabic, achieved a correlation of .83 among 23 respondents.

Mach IV items are presented in a seven point Likert format. To minimize

² Only one item in the scale was altered. Item 17, "Barnum was wrong when he said, 'There's a sucker born every minute,'" was changed to "The man who said, 'There is a fool born every minute' was wrong."

³ The Arabic version of the scale may be obtained from the author.

a response set by the respondents, half of the 20 items are randomly phrased in a positive way and half in a negative way. The scoring system has been converted so that with the addition of 20 points, a score of 100 equals the theoretical neutral point in which the respondents' agreement and disagreement with the items balances out. A score of 160 means strong agreement with every item worded in a positive Machiavellian direction and strong disagreement with every item worded in the opposite direction. The reverse pattern produces a score of 40.

After pretesting the questionnaire, final versions were completed by three groups of respondents. The first group was composed of male and female students enrolled in an introductory sociology course at the American University of Beirut, who voluntarily completed the English version. The course, required by many programs in the Faculties of Arts and Sciences, Agriculture, Architecture, and Medical Sciences, draws a reasonable cross-section of AUB students. A second group, composed of students in another introductory sociology course, completed the Arabic version of the Mach IV. The third group, who also completed the Arabic version, were students in two government colleges in a small city in South Lebanon. The males in this group attended one college, the females another. The language of instruction in both colleges was Arabic. The questionnaire was completed in the foreign language classes of the last two grades of both colleges and respondents included almost all students in those grades.

The administration of the questionnaire was preceded by an explanatory statement in the appropriate language and was accomplished without difficulty in each location. An insignificant number of questionnaires were not returned, and all those returned were usable. Questionnaires completed by non-Arabs were excluded from the analysis.

Although the respondents cannot be regarded as typical of Lebanese or Arabs in general, they do permit comparison with student respondents in other studies in the United States (5, p. 32). The government college group can be considered as being less Westernized than the AUB group. Following a curriculum in Arabic, sexually segregated in accordance with tradition, and living farther from the influences of cosmopolitan and more Westernized Beirut, the government college group did not have the French or English language facility or cultural background most typical of AUB students.⁴ While there are socioeconomic and other factors to consider, the government college

⁴ Ninety-six percent of the AUB sample received their secondary school education in either English or French.

students represent a relatively traditional group. Thus, there were three different groups of respondents: Westernized-English version, Westernized-Arabic version, and Traditional-Arabic version.

C. RESULTS AND DISCUSSION

Table 1 indicates Mach Scale means and variances from respondents completing the Mach IV in the present study and from studies by Christie and Geis (5, p. 32) in the United States.

To the extent that the scores are comparable cross-culturally, the results of a comparison of the unweighted mean scores indicate no significant difference between the American male respondents and the Arab males who completed the Mach IV in English ($df = 1/787$, $F = .52$, $p > .05$). An overall significant difference between both Arab and American respondents was present ($df = 1/1639$, $F = 11.93$, $p < .01$), however, which was primarily due to the differences found between female respondents ($df = 1/850$, $F = 6.77$, $p < .01$).

No significant differences at the .05 level were observed between Westernized and Traditional respondents ($df = 1/234$, $F = .34$), between those who completed the Arabic and those who completed the English version ($df = 1/234$, $F = .36$), or between the males and the females in any of the groups, ($df = 1/234$, $F = .03$). All main effects and interactions were nonsignificant. Orthogonal comparisons were used to separate out the effects of English *versus* Arabic versions and Western *versus* Traditional groups within the two Arabic versions. Neither of these comparisons nor their interactions with the sex variables were significant.

Respondents were asked to indicate the size of the community in which they had lived most of their lives and given three choices: a large city, such as Beirut or Damascus; a smaller city, such as Saida or Zerka; or a village. Respondents who completed the Arabic and the English versions were com-

TABLE 1
MACH MEANS AND VARIANCES OF ARAB AND AMERICAN RESPONDENTS

Respondents	Male			Female		
	Mean	Variance	N	Mean	Variance	N
Arabs						
Westernized-English	96.66	218.15	65	95.30	155.75	20
Westernized-Arabic	92.03	291.72	29	95.63	210.54	11
Traditional-Arabic	97.07	120.78	56	93.68	144.24	61
Americans (English)	93.69	206.50	724	87.66	180.90	832

bined to test the hypothesis that those with urban backgrounds would obtain higher Mach scores than those with nonurban backgrounds.

There were no significant differences at the .05 level between those from large cities, smaller cities, and villages ($df = 2/234$, $F = 1.16$), between the males and females from such communities ($df = 1/234$, $F = .78$), or in interaction ($df = 2/234$, $F = 1.25$).

To indicate further the extent to which the Arabic and English versions of the scale might be considered equivalent, an analysis of variance was carried out. The lack of a significant difference in the mean scores of the two versions was rather clear ($df = 1/240$, $F = .12$, $p > .05$). There was also no significant difference when sex was considered ($df = 1/240$, $F = .09$, $p > .05$). A comparison of the split-half reliabilities corrected by the Spearman-Brown formula also supports the equivalence of the two versions. The reliabilities of the two versions of the Mach Scale completed by the Westernized subjects do not greatly differ for males (.70, English version and .77, Arabic version), while the difference between females is greater (.70, English version and .59, Arabic version). The reliability of the Arabic version for the Traditional subjects was lower, with .62 for males and .47 for females.

Religion, nationality, polygamous and nonpolygamous family background, and academic major were also considered, but no significant differences were observed among the mean scores in each.

As has been indicated in the introduction, the study of Arab personality characteristics has offered many more untested hypotheses than empirical data. It would seem quite appropriate to apply a much more critical examination of such hypotheses before continuing to incorporate them into the limited psychological literature concerning Middle Eastern peoples.

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THE EFFECTS OF CONFESSION ON ALTRUISM*

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SUMMARY

To test the hypothesis that confession serves to reduce guilt and thus to decrease subsequent altruism, 74 adult men and 99 adult women, alone or accompanied by other men and women, were observed entering or leaving a Catholic church during confession hours and asked to donate to the March of Dimes. Both the number of people donating and the amount given were recorded. Subjects were significantly more likely to donate prior to confession, and men gave significantly more money prior to than after confession. Women, however, donated larger amounts postconfession. Men and women were significantly more likely to donate when with a woman than when alone, and women gave significantly more money when with another woman than when alone. Men, however, gave significantly less money when with a woman than when alone. Men also donated more money overall than women. The results suggest that confession may serve to reduce altruism, at least for men, and that the presence of a woman may serve to increase it, at least for women.

A. INTRODUCTION

A substantial amount of research on transgression has led to the conclusion that transgression tends to increase subsequent compliance with a request for help. One possible explanation for this (2) is that transgression creates an unpleasant state called guilt, which altruism then relieves. Although this explanation in terms of guilt has been criticized (e.g., 1), it does lead to a prediction which has been supported in two experiments: that confession, a time-honored way of reducing guilt, should reduce subsequent altruism. Carlsmith, Ellsworth, and Whiteside [see Freedman (2)] found that subjects who were given the opportunity to confess that they had cheated on a test were less likely to volunteer to serve in future experiments than subjects who had no chance to confess their cheating. Regan (5) found that discussing one's wrongdoing (confession) reduced subsequent donations to a charity. These studies

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were carried out in laboratory situations, with subjects induced to transgress and then confess their transgression.

The present study was carried out in a field situation without inducing guilt experimentally. Instead, subjects entering and leaving a Catholic church during confession hours were compared. It was predicted that if confession not only alleviates sin but also reduces guilt and if guilt motivates altruism, then persons leaving the church should donate less to the March of Dimes than persons entering.

A second purpose of the study was to see whether the presence of another person would affect altruism in a nonemergency situation. Although a number of studies have shown that bystander intervention in an emergency tends to be reduced by the presence of another individual, it is not clear what effect the presence of another person in a nonemergency situation would have. Rosenhan and White (6) found that children were more likely to give to charity when observed than when alone. However, Konecni and Ebbesen (4) found that women alone were more likely to help an "injured" confederate than when accompanied by another woman or, especially, another man. The present study attempted to see whether men and women, alone or accompanied by a man or a woman, would differ in their donating behavior.

B. METHOD

1. *Subjects*

Ss were all people who appeared to be adults, who were either alone or accompanied by only one other adult, who entered or left a Catholic church in an inner city neighborhood during the advertised confessional hours of 3:00-4:00 p.m. on six Saturdays in a two-month period. Frequently, the priest left early, and the observations were then terminated for the day. Ss were 74 men and 99 women, over half of whom appeared to be the *E*s (two male graduate students in education) to be Spanish American.

2. *Procedure*

During the confessional hour the first experimenter (E_1) stood on the sidewalk near the only entrance to the church holding a March of Dimes container. As an *S* or pair of *S*s approached, E_1 said, "Would you care to donate to the March of Dimes?" and held out the container. *S*s were then thanked, regardless of whether or not they donated, but no further communication was held. Following each donation, when no *S*s or potential *S*s were watching, E_1 counted the donation in the jar and signaled the amount to E_2 , who was

standing close enough to observe the Ss but far enough from them and E_1 apparently not to be noticed. E_2 then recorded the amount of donation, sex of S, and who was with him, if anyone. Because of the sparse attendance, it was possible to request donations from each potential S either on the way in or out and to remember who had previously been solicited, so that no person would be solicited twice. Ss were solicited on the way in unless E_1 had not yet had a chance to count the money, other potential Ss were visible, or an S who had not yet been solicited was seen to be leaving the church. Assignment of Ss to preconfession or postconfession conditions was thus very close to random. However, no male pairs of Ss were seen to enter the church, and thus there were no Ss in this cell. Presumably, this is either because all men with other men entered prior to confession hours or because no men actually went to church together but some met each other there and walked out together. The general tendency for fewer people to be seen while going into the church may also be due to the fact that some people entered the church prior to confession hours and waited to confess before leaving.

Previous observation in the church and discussion with several priests had confirmed that essentially all persons who entered the church during these hours did so for the purpose of confession. However, no attempt was made to confirm this directly, as it was felt this would be an invasion of privacy. All money was later turned over to the March of Dimes.

C. RESULTS

The number of Ss and percentages donating in each condition, as well as the mean donations (including those people who did not donate), are presented in Table 1.

TABLE 1
PERCENTAGES OF PEOPLE DONATING AND MEAN DONATIONS IN CENTS BY TIME OF DONATION WHEN ACCOMPANIED OR ALONE

Time of donation	%	Alone		With a man			With a woman		
		Mean	<i>n</i>	%	Mean	<i>n</i>	%	Mean	<i>n</i>
Men									
Before confession	100	29.0	3	—	—	0	71	11.7	14
After confession	11	5.4	35	21	2.5	14	50	4.4	8
Women									
Before confession	21	1.2	14	0	0	14	50	3.2	14
After confession	11	8.5	35	0	0	8	50	2.3	14

1. *Pre-Post Confession*

Chi square analyses revealed that a higher percentage of people donated before confession (39%) than after (19%; $\chi^2 = 6.84$, $df = 1$, $p < .01$). The difference in frequency of preconfession (76%) and postconfession (19%) donations was significant for men ($\chi^2 = 17.01$, $df = 1$, $p < .001$) but not for women (24% and 19%, respectively; $\chi^2 < 1$, $df = 1$).

An 11 group unweighted means analysis of variance revealed that the mean amounts of money given in the different conditions were significantly different ($F = 3.623$, $df = 10/162$, $p < .05$). *Post hoc* comparisons revealed that the difference in donations before and after confession was not significant ($F = 3.52$, $df = 1/162$), nor was it when men accompanied by men were excluded ($F = .76$, $df = 1/162$); however it was significant when only Ss who were alone were considered ($F = 19.13$, $df = 1/162$, $p < .05$).

Men gave significantly more prior to confession than afterwards, whether including ($F = 63.62$, $df = 1/162$, $p < .001$) or excluding ($F = 68.08$, $df = 1/162$, $p < .001$) those accompanied by other men; however, women gave significantly less on their way into confession ($F = 63.77$, $df = 1/162$, $p < .001$).

2. *Alone vs. accompanied*

Overall, 17% of the Ss gave when alone, 8% when accompanied by a man, and 56% when accompanied by a woman ($\chi^2 = 33.66$, $df = 2$, $p < .001$). Of the men, 18% gave when alone, 21% when accompanied by another man, and 56% when accompanied by a woman; 14% of the women gave when alone, 0% when accompanied by a man, and 50% when accompanied by a woman. Men accompanied by a woman were significantly more likely to donate than men alone ($\chi^2 = 10.61$, $df = 1$, $p < .001$), but men alone and those with another man did not differ significantly ($\chi^2 < 1$, $df = 1$). Women accompanied by another woman were also more likely to donate than females who were alone ($\chi^2 = 9.73$, $df = 1$, $p < .01$); but women alone and those with a man did not differ significantly ($\chi^2 = 2.06$, $df = 1$, $p < .01$).

Men gave significantly more when alone than when with another man ($F = 53.00$, $df = 1/162$, $p < .001$), but not when including only postconfession giving ($F = 3.34$, $df = 1/162$), and they also gave more when alone than when with a woman ($F = 23.85$, $df = 1/162$, $p < .05$). Women gave nonsignificantly more when alone than with a man ($F = 12.61$, $df = 1/162$) and significantly more when accompanied by another woman than when alone ($F = 74.08$, $df = 1/162$, $p < .001$).

3. Sex Differences

There was no significant difference between the percentages of men (32%) and women (21%) who donated ($\chi^2 = 1.63$, $df = 1$). Men alone, however, gave significantly more money than women alone ($F = 52.43$, $df = 1/162$, $p < .001$), and the difference between men and women was also significant when all men and women were considered ($F = 23.41$, $df = 1/162$, $p < .05$).

D. DISCUSSION

The results of the study are not completely clear-cut because of the somewhat different pattern found for frequencies and amounts of donation, the unequal *ns*, and the lack of any male-male pairs entering the church. In general, the frequency data suggest that more people donated to charity prior to confession than afterwards; this pattern is also found when size of donations is considered for men or for people alone, but the opposite pattern is found when size of donation for women across all conditions is considered. The findings are thus only partially consistent with the theory that confession serves to reduce guilt and thus lower the chances of someone's being altruistic. It also appears that women who donated after confessing were likely to give larger donations. Perhaps this is because the act of confession served also to raise women's self-esteem and cause them to feel good, and feeling good, as Isen and Levin (3) have suggested, can lead to subsequent altruism.

A second somewhat inconsistent set of findings concerns the effects of being accompanied by another person. The literature on bystander intervention, which suggests that the presence of another serves to reduce helping, is supported only by the nonsignificant tendency for the presence of a man to reduce subsequent helping (significant only when the man alone preconfession group, which has no corresponding male-male preconfessional cell, is included), although the other frequency and amount data are completely consistent with this finding and not a single woman gave when accompanied by a man. On the other hand, more men and women gave when accompanied by a woman than alone and women gave significantly larger amounts when with another woman than alone; yet men gave a *smaller* amount when with a woman than when alone, although they were significantly more likely to donate. It thus appears generally that the presence of a man may have served to reduce giving and the presence of a woman to increase it, with the sole exception being the smaller size of the donation given by a man with a woman companion. The reasons for this are not completely clear, but are apparently not due to sex-stereotyped roles, since the patterns hold for *Ss* of both sexes. Konecni

and Ebbesen (4) did find that a companion of either sex, but particularly a man companion, reduced the amount of help given in an emergency situation. Diffusion of responsibility coupled with a tendency for people to feel that men are more responsible for helping in an emergency could explain that result but not the present ones. Perhaps it is simply that women are believed to be more sympathetic to the March of Dimes, a charity dealing with birth defects of children, and people are more likely to donate with a woman companion because they feel it will gain her approval. Since, in fact, men gave more money than women in this study, this belief appears to be unfounded.

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EXPECTANCY DISCONFIRMATION AND ATTITUDE CHANGE*

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SUMMARY

An experiment was conducted testing the hypothesis that sources delivering unexpected communications (long-haired males arguing against marijuana usage and seminarians arguing in its favor) would be more persuasive than communicators of expected messages (promarijuana hippies and antimarijuana seminarians). Greater attitude change for unexpected sources was found only when the message was antimarijuana. Unexpected communicators also were rated as more sincere and honest than expected sources. Possible reasons for the failure of the expectancy effect to hold for promarijuana communications were suggested, and the results were discussed in terms of a variety of social-psychological theories.

A. INTRODUCTION

Interpersonal perceptions and behaviors are partly guided by the prior expectations which the participants bring to social interactions. It has been suggested (17) that everyone forms and tests expectancies about the characteristics and behavior of other people in a process similar to the scientific method. This process of forming and testing such "hypotheses" no doubt characterizes the experiences of Ss in psychological research. In the laboratory situation, the S (typically an American college freshman or sophomore) is confronted by a strange environment and strange people, and he likely responds by forming expectations about them that will affect his thinking and action (25). These expectations are of special importance in studies of attitude change, where, in addition to the experimenter, the S often encounters a communicator of an attitudinal message. If the S can discern some cue (based, for example, on appearance) in the communicator, he can assign this person to some social category (1) to use in forming a set of expectancies regarding the communicator's beliefs and behaviors. These expectancies, although they may be deeply rooted in the S's personal biases and may even be irrelevant to the topic of the persuasive message [e.g., Aronson and Golden (6)], never-

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theless may strongly affect the degree to which the communicator can influence the S.

Both in and outside the laboratory, one's expectancies about the behavior and opinions of others are usually confirmed. But what happens when one's predictions are violated, and a communicator fails to behave in an expected fashion? Several lines of research and theory provide answers to this question. Ewing (9) found that Ss whose expectations that an attitudinal message would support their own position were disconfirmed were more influenced by the message than Ss whose expectations of opposition were confirmed. Similarly, the continuing studies on the effects of forewarning (2, 11, 22) have shown that unexpected messages produce more attitude change than expected ones. The expectancies involved in these studies, though, were not related to the characteristics of the communicator.

Other investigations have dealt directly with expectations based on a target person's characteristics. Koeske and Crano (18) found that statements attributed to incongruous or unexpected sources were boosted in credibility. Similarly, in two experiments, Walster, Aronson, and Abrahams (29) demonstrated the enhanced credibility and persuasiveness of sources who make unexpected (i.e., apparently self-defeating) statements. In these reports the expectations Ss formed were tied to their preconceptions of the communicator's beliefs and behaviors based on social roles, stereotypes, and other information provided by the experimenter. It appears that when expectancy disconfirmation involves incongruity between expected and actual messages, the source and the message are accorded greater credibility and have greater influence.

Additional evidence supportive of an expectancy effect is provided by interpersonal attribution research [see Jones and Davis (14)]. According to this line of thought, a person who acts out of role—i.e., who violates the expectancies associated with a specific role—will be seen as more sincere than a person who conforms to the expectations for that role (15). Presumably a person who acts out of character does so because of strong inner convictions in the face of countervailing role requirements. Some previously mentioned studies (e.g., 29) suggest that a communicator who is perceived as internally motivated will induce a relatively high degree of acceptance. Similarly, Mills and Jellison (23) found that a communicator was seen as less sincere, honest, and impartial when his communication was purportedly desirable to his audience than when the source knew that his message would not be well received. Jones *et al.*, who directly manipulated the formation, confirmation, and disconfirmation of expectancies, and then measured the strength of at-

titude attributed to the communicator, concluded: "When the expectancy is in conflict with behavior, the attributional tendency should shift from what is predicted (i.e., expected) on the basis of circumstantial evidence to what is directly revealed in behavior. . . . It is apparent that the shift is striking indeed, as if the subject, having been earlier misled to form one impression of the target person, now swings too far in the other direction" (16, p. 78). If a subject forms an expectancy concerning a communicator's opinion which is disconfirmed by behavior, the subject's attitude, like his attribution of attitude to the communicator, may "overswing" in the direction of the unexpected communication.

Further theoretical analyses of the proposed expectancy effect have been reserved for the discussion section.

The major aim of the present research was to explore the generality of the above findings regarding expectancy disconfirmation, perceptions of the communicator, and attitude change. Unlike much of the reviewed research, the present study dealt with an attitudinal issue, usage of marijuana, which was familiar and of high interest to most Ss. Also, unlike past work where expectations about the communicator's position were conveyed by the experimenter, Ss had to form their own expectancies naturally, on the basis of appearance and other cues given off by the communicator.

Three types of communicators were used in the study: (a) a long-haired, unkempt ("hippie") male, whom an S presumably would expect to express an opinion favorable to marijuana usage; (b) a religiously affiliated communicator (a seminarian), whom an S would expect to be antimarijuana; and (c) an unseen source, about whom an S would possess no information and therefore no definite expectations.

It was hypothesized that college Ss whose expectancies were disconfirmed (i.e., who heard an antimarijuana hippie or a promarijuana seminarian) would change their attitudes on this issue more than Ss whose expectancies were confirmed (e.g., who heard a promarijuana hippie). Furthermore, it was predicted that these differences in attitude change would be associated with different trait attributions, with the disconfirming communicators being regarded more favorably in terms of sincerity and related characteristics.

B. METHOD

1. Design

Direction of communication (pro- vs. antimarijuana) and type of communicator (hippie, seminarian, or unseen) were varied in a 2×3 factorial design. In addition, there was a no-communication control group. The dependent

variables were pre- and posttreatment attitude measures and postinterview ratings of the communicator.

2. *Subjects*

Ss were 85 students in introductory psychology courses at Loyola University of Chicago. They were assigned to cells in such a way that the communication they heard was opposed to their initial opinion. Assignment to conditions was otherwise random.

3. *Dependent Measures*

Both pre- and posttreatment attitudes were measured with two devices: (a) a *S* self-rating of agreement with the statement, "I approve of the use of marijuana," and (b) *S* agreement with 30 statements about marijuana which ranged from favorable to very unfavorable according to pilot tests. These two measures were intended to reflect the self-rated own position and belief content aspects of attitudes identified by Upshaw, Ostrom, and Ward (28). For both measures, the pre- and posttests were different in response format but yielded numerically comparable scores.

The 30 belief content items were assigned favorability scale values ranging from -2 (very unfavorable) to $+2$ (very favorable) based on the prior ratings of 13 judges. The scaling procedure was modeled on the method of absolute judgments (27). Twelve statements were favorable, 12 were unfavorable, and six were neutral. Two 15-item matched forms were constructed such that each contained six favorable, six unfavorable, and three neutral statements. One form served as the pretest and the other as the posttest. The order in which Ss completed the two forms was counterbalanced within conditions.

The marijuana items on both pre- and posttests were imbedded in a larger opinion survey. The pretest dealt with attitudes towards marijuana, pollution, overpopulation, and the Vietnam war. The posttest included questions about marijuana, and about the communicator's sincerity, honesty, convincingness, "hippieness," and various other traits chosen from Anderson's (4) list of adjectives.

The posttest also contained items designed to gain information about the success of the experimental manipulation, and the prejudices and stereotypes of the Ss concerning marijuana usage and users.

4. *Message*

The counterattitudinal message was presented via a tape-recorded interview. The two tapes (one pro- and one antimarijuana) used were of approxi-

mately equal length and as similar in content as possible in terms of number and types of arguments. Care was taken to make the tapes sound like actual spontaneous interviews taking place in another room.

The remainder of the experimental apparatus was also designed to create the impression that the tape recording was actually a live interview. Each *S* was shown a control box with a toggle switch and a headphone jack. The switch, which actually turned the tape recording on and off, was labelled "Between room intercom on/off," and the headphone jack was labelled "headphone monitor." A dummy wire from the control box led to an intercom panel in the wall of the experimental room. *Ss* listened to the recording through headphones plugged into the "headphone monitor" jack in the control box.

5. Procedure

There were two experimental sessions, given about a week apart. In session one, *Ss* completed the pretest and signed up for part two.

In part two the *S* was confronted by an *E* and a communicator confederate (*C*).¹ *E* introduced *S* and *C* to each other and asked each what school he attended and what his major was. The hippie communicator stated that he attended Loyola University as a psychology major, and the seminarian communicator stated that he was a theology major from Niles Seminary (a division of Loyola).

E explained that part two of the experiment required two roles and conducted a rigged drawing to determine role assignment. The *S* was always assigned the role of listener, and *E* took him aside and explained that he was to listen in (overhear) as the communicator was being interviewed in another room. *E* explained that the purpose of the listening in was to study processes involved in reactions to another person's interview in the absence of visual cues.

E then turned to the *C* and sent him to another room, presumably to meet another experimenter.

Once the *C* had left, *E* produced the control box headphones which had been hidden. *E* explained that by turning the toggle switch to the "on" position, he would simultaneously connect (by microphone) the two experimental rooms and signal the second *E* to begin the interview. He then turned on the switch, thus beginning the tape-recorded interview. *Ss* heard whichever tape

¹ The authors are indebted to Della Caponigri, Marcie Hohner, Pat Jage, Kenneth Kerber, Tom Peterman, James Stipak, Robb Strasser, Dorothy Thornton, Michael Trotta, and Tom Walter for their invaluable assistance in conducting the experiment and pilot work.

recording presented a position opposed to their own initial positions. When the *S* removed his headphones at the conclusion of the interview, *E* switched off the tape and gave the *S* the posttest to complete.

The procedure for *Ss* in the unseen communicator conditions was similar, with one major exception. *Ss* did not see the communicator; rather, they were told that another *S* had already been assigned to another room and another *E*. *Ss* thus listened to a discrepant message without first seeing its source.

Control *Ss* received no attitudinal message, but simply filled out the marijuana portion of the posttest.

Before being dismissed, all *Ss* were debriefed. Care was taken to discover whether or not experimental *Ss* were aware that they had listened to a tape-recorded or rehearsed interview. Any who were aware were excluded from the data analysis.² *Ss* in the seminarian conditions were asked if they had understood that the confederate was in fact a seminarian. The two *Ss* who did not were included in the data analysis as a part of the corresponding hippie communicator cell, since hippie and seminarian communicators were identical in all ways except religious stature. Finally, the experimental manipulations were revealed and explained, and *Ss* were thanked and dismissed.

6. Scoring

Responses to all questions were assigned numerical values ranging from -6 to +6. Pre- and postbelief content scores were computed for each *S* from the *Ss* agreement rating and the predetermined favorability scale values, by the weighted average (combinatorial) formula (3, 21). This index was computed in such a way that agreement with favorable statements and disagreement with unfavorable statements would yield a high score indicating a favorable attitude toward marijuana. Attitude change scores were computed so that a higher difference between pro- and posttreatment scores would indicate change in the direction of the communication. There were two change scores for each *S*, one from the self-rating and one from the attitude content measure described above.

C. RESULTS

Two planned orthogonal comparisons of cell means were used throughout the data analysis: planned comparison #1, comparing the cell means for the

² Nineteen *Ss* were identified during debriefing as having discerned that the interview was taped. All analyses reported excluded these *Ss*. Including them in the analyses does not alter any significance levels.

hippie-antimarijuana communicator to the combination of cell means for the seminarian-anti and unseen-anti conditions; and planned comparison #2, contrasting the cell mean for the seminarian-pro condition against the combination of cell means for the hippie-pro and unseen-pro conditions. All numbered comparisons which follow pertain to these replanned contrasts.

1. *Attitude Change/Self-Rating*

Table 1 shows the mean pretest, posttest adjusted posttest (from covariance analysis), and change scores for the six conditions.³ As predicted, comparison #1 (computed for change scores) was significant ($F = 5.20$, $df = 1$ and 53 , $p < .05$), with the antimarijuana hippie communicator (unexpected condition) more effective in changing attitudes than the other two antimarijuana communicators. Contrary to prediction, however, the unexpected communicator of the pro message (the seminarian) did not elicit significantly greater attitude change than the hippie-pro or unseen-pro communicators ($F = 2.68$, $df = 1$ and 53 , n.s.).

Planned comparisons were also computed for the adjusted posttest means from an analysis of covariance (which used pretest scores as the covariate). Although neither of the two comparisons was significant, the data for the antimarijuana communicators clearly follow the predicted pattern (the hippie-anti communicator was more effective than either the seminarian-anti or unseen-anticommunicators). The seminarian pro communicator was more effective than the hippie pro communicator, but less effective than the unseen-pro communicator.

Neither the 3×2 analysis of variance (24) for change scores nor the 3×2 analysis of covariance for posttest means revealed any significant effects.

2. *Attitude-Change/Content Measure*

The mean pre-, post-, adjusted post-, and change scores for this measure of attitude change are also shown in Table 1. Again, as predicted, the antimarijuana hippie (unexpected communicator) was more effective in changing attitudes than the seminarian-anti and unseen-anti communicators ($F = 14.54$; $df = 1$ and 53 ; $p < .001$). Once more, however, contrary to prediction, attitude change elicited by the promarijuana seminarian did not differ signi-

³ The control group was eliminated from any analyses, since all members of this group turned out to be initially antimarijuana. This made meaningful comparison with all of the experimental conditions impossible.

TABLE 1
 MEAN PRE-, POST-, AND CHANGE SELF-RATING AND BELIEF CONTENT ATTITUDE SCORE AS A FUNCTION OF TYPE
 OF COMMUNICATOR AND DIRECTION OF MESSAGE

Experimental condition	Self-rating				Belief content				n
	Pre	Post	Adjusted posttest	Change	Pre	Post	Adjusted posttest	Change	
Confirming	Hippie pro	-3.80	-1.98	0	1.70	1.90	2.02	.20	10
	Seminarian anti	2.22	— .27	.22	2.24	2.14	1.90	.10	9
Disconfirming	Hippie anti	2.00	-1.19	1.08	2.01	1.86	1.77	.15	13
	Seminarian pro	-4.17	— .76	1.33	1.68	1.92	2.05	.24	12
	Unseen pro	-4.00	— .27	1.78	1.65	1.91	2.06	.26	9
	Unseen anti	2.00	— .78	.67	2.08	2.10	1.98	-.02	6

ificantly from the change elicited by the other two promarijuana communicators ($F < 1$).

Comparison #1 for adjusted posttest means was also significant in the predicted direction ($F = 4.41$; $df = 1$ and 52 ; $p < .05$), with posttest score in the hippie anti (unexpected) condition more antimarijuana than the posttest scores associated with either of the other two antimarijuana communicators.

A 3×2 analysis of variance of the change scores revealed a significant main effect for type of communication ($F = 6.74$; $df = 1, 53$; $p < .05$), indicating that the pro communication was more effective than the anti-communication. A 3×2 analysis of covariance (with pretest scores again the covariate) on posttest scores not surprisingly revealed that subjects who heard a pro communication were more favorable to marijuana than those who heard anti communications ($F = 5.72$; $df = 1$ and 52 ; $p < .02$).

3. *Sincerity, Honesty, and Convincingness*

Ratings of sincerity, honesty, and convincingness were predicted to be higher in expectancy disconfirmation conditions, and this hypothesis was confirmed for the sincerity and honesty ratings. Comparisons #1 and #2 were significant for both of these items ($F = 4.27$; $p < .05$, and $F = 23.42$; $p < .01$ for the sincerity comparisons; $F = 4.99$; $p < .05$, and $F = 4.44$, $p < .05$ for the honesty contrasts; $df = 1$ and 53 for all tests), in each case the ratings for unexpected communicators being higher than those for expected or unseen sources.

The results for the convincingness question, however, did not confirm the hypothesis. Neither comparison revealed any reliable differences ($F = 1.14$ for comparison #1 and $F < 1$ for comparison #2, both df 's = 1 and 53).

Three by two analyses of variance computed for each of the three items failed to reveal any significant main effects or interactions.

4. *Relaxedness Ratings*

An additional finding of possible interest was that the promarijuana speaker was rated as more relaxed than the antimarijuana speaker ($F = 10.15$; $df = 1.52$; $p < .002$). Quite conceivably a person who openly advocates an illegal behavior may be perceived as a "cool customer."

5. *Hippieness Ratings*

As a manipulation check, Ss were asked to rate the "hippieness" of the communicator. On this very transparent measure, a communicator was rated

higher on the scale when he argued in favor of marijuana than when he argued against it ($F = 11.26$; $df = 1, 52$; $p < .005$). The main effect of type of source was also significant ($F = 6.10$; $df = 2, 52$; $p < .005$). The hippie communicator was rated higher in "hippieness" than the seminarian, but only when both argued in favor of marijuana. In all cases, both hippie and seminarian were rated higher than the unseen source. It is clear from these data that the experimental manipulations did not fully induce the expected differences in perceptions of the sources.

6. *Correlations Between Attitude Change and Perceptions of the Source*

An additional way of testing for variables which may have mediated any attitude change is to compute correlations between the measures of attitude change and subjects' ratings of the communicator on the various straits. There is slight evidence that sincerity and convincingness ratings of the communicator are related to the content and self-report attitude change measures, respectively ($r = .287$, $N = 59$, $p < .05$); and $r = .255$, $N = 59$, $p < .053$, respectively). Additional analyses revealed a significant correlation between the self-report measure of attitude change and subjects' ratings of the communicator's degree of relaxation and tone of voice ($r = .292$, $N = 58$, $p < .05$ and $r = .315$, $N = 59$, $p < .05$, respectively).

D. DISCUSSION

The results of this experiment provide some support for the hypothesis that communicators who present unexpected communications are more persuasive than both expected communicators and communicators about whom no expectancies have been formed; however, this result held only for anti-marijuana communicators. In retrospect, the failure of the expectancy hypothesis to hold for the procommunication seems attributable to two factors. First of all, the fact that one individual played all the communicator roles may have provided control at the cost of ambiguity. The seminarian's appearance (long hair) and manner may have led Ss to expect a liberal stance instead of the intended conservative antimarijuana position. As Watts (30) has pointed out, identifying when an expectancy has been disconfirmed is a tricky business, since "a particular outcome seldom confirms or disconfirms just one expectation" (p. 477). In short, use of the seminarian may have resulted in the formation of confusing and quite possibly contradictory expectancies.

The second point concerns the expectancies which might be associated with an unseen communicator. An antimarijuana stance is more popular than a promarijuana stance both in society at large and among the sample of students surveyed in the present research. Thus, it is quite possible that Ss in the unseen communicator conditions expected the communicator to express an antimarijuana opinion. Expression of a promarijuana stance by the unseen source would then disconfirm this expectation, and the promarijuana unseen communicator would elicit more attitude change. In fact, the data are consistent with such an interpretation, since the unseen pro communicator did elicit much more attitude change than the unseen anti communicator or any other communicator on both change measures. Further research is needed to clarify the confusing effects (and possibly the confusing expectancies) of unseen communicators.

When the confusing unseen communicator conditions were ignored leaving a 2×2 design, the results of the experiment clearly confirmed predictions. Unexpected communicators were much more effective than expected communicators. The magnitudes of the F tests for the appropriate comparisons are quite large ($F = 24.37$ for self-rating measure; $F = 38.30$ for content measure; $df = 9$ and 53 and $p < .001$ in both cases). These data are similar in direction and magnitude to results obtained in a pilot study, where an antimarijuana hippie and a promarijuana nun elicited more attitude change than a promarijuana hippie or an antimarijuana nun ($F = 10.22$, $df = 1$ and 36 , $p < .001$). While this earlier study was not as tightly controlled as the one reported here (e.g., instead of tape recordings, Ss heard a rehearsed discussion; two communicators of different sexes were used instead of one), the replicability of the results is nevertheless encouraging.

The results concerning ratings of the communicator's sincerity and honesty confirmed predictions and offer good support for the hypothesis that unexpected communicators are perceived as more sincere and honest than are expected communicators. Failure to confirm the predictions regarding convincingness is confusing in light of the other confirmed hypothesis. Apparently, a communicator who is perceived as sincere and honest is not necessarily perceived as convincing, perhaps especially so when the communication presented conflicts with the attitude of the perceiver. It may also be that perception of convincingness is not necessary for the perceiver actually to be convinced.

The finding that unexpected communications produce more attitude change than expected ones is relevant to a variety of social psychological theories.

An examination of this finding in terms of the following theoretical orientations promotes assessment and integration of theories and suggests directions for future research.

1. *Social Roles and Performance*

In his dramaturgic analysis of social roles and interactions, Goffman (12) maintains that we seek information about strangers based on their conduct and appearance, and we apply stereotypes and past experiences in determining what to expect from them. In this research, it was assumed that communicators were present in such a way that stereotypic expectations would be formed. It appears that the role expectancies may have been stronger in the hippie conditions.

Goffman also observed that interaction participants attempt to detect and tend to give special weight to any flaws in the "performance" that others are giving. When a disruption in a presentation occurs (e.g., when an unexpected behavior is given off), observers feel nonplussed and regard the out-of-role behavior as a revelation of the performer's true nature. A deviation from role expectations, however, may not necessarily enhance sincerity or other good traits. A hippie arguing against marijuana may be seen as sincere by opposing the views of his presumed reference group, but he may be judged an insincere member of that group (i.e., a "hippiecrit"). This may render the source unconvincing.

2. *Cognitive Organization*

Theories of cognitive organization (e.g., 13, 17, 19) predict that people perceive and respond to the environment differently according to the complexity and salience of their cognitive structures and schemata. Environmental incongruity (e.g., in the form of a disconfirming communicator) and the arousal it produces may interact with cognitive complexity to determine susceptibility to social influence. People with simple or concrete views of the world may show greater resistance to change at low levels of incongruity and less resistance with high incongruity than cognitively complex persons (13).

In the present research, cognitive complexity may have been confounded with initial attitudes in that simplicity is associated with belief conventionality. If it is assumed that incongruity was mild in the disconfirming conditions (and this is especially plausible in the seminarian condition), then initially anti-marijuana (i.e., those holding the conventional view) would be

expected to resist change more than initially promarijuana Ss. This would account for the greater effect of incongruity in the antimarijuana message conditions.

3. *Similarity, Attraction, and Influence*

Considerable research has dealt with the relationship between similarity and attraction, and between the various bases of attraction for a communicator and his persuasiveness. Simons, Berkowitz, and Moyer (26) concluded that attitudinal similarities facilitate attitude change on an issue only if the similarities seem relevant to that issue, and that certain dissimilarities, especially membership group factors that enhance respect, etc., can contribute to attitude change. In the present research different types and degree of similarity and attraction processes may have been operating in the different source conditions. Promarijuana Ss may have felt similar to the hippie, and antimarijuana Ss may have felt similar to the religious person. The similarities could have varied in relevance to the attitude issue (i.e., similarity on the marijuana issue seems more relevant in the hippie conditions). Additionally, Ss may have admired the religious person and considered the hippie an expert. The type and degree of attitude change across conditions could have resulted from different mechanisms and bases of attraction.

Social comparison theory (10) also stipulates a relationship between similarity and social influence. An uncertain person will compare his views with the opinions of similar others. A counterattitudinal statement from a disconfirming source would produce the high degree of uncertainty needed to mobilize social comparison.

4. *Commodity Values of Messages*

Using an economic analogy, Brock (7) suggested several variables that determine the value and thus the effectiveness of a message. These variables include recipient's interest in possessing the message, scarcity of sources and recipients, and effort needed to deliver and receive the message. The messages in this study may have been "commodified" in that the S was presumably the *only* person to *overhear* the E elicit the source's *private* feelings on a controversial topic. This commodification may have been greater in the disconfirming condition in that the source may be seen as paying more costs in revealing his opinions, and may be regarded as a scarcer source with more interesting views than one whose statements are predictable.

5. *Attribution of Causality*

Attribution theory deals with the phenomenological inferences of another person's dispositions from his actions. The prediction from this theory (14) that out-of-role behavior will be regarded as more internally motivated or sincere was equivocally supported by the present data. The related prediction of this theory that unexpected behaviors should increase one's confidence in the correctness of dispositional attributions could be tested in future studies of the present type.

Numerous features of the experimental situation could affect *S*'s inferences of the communicator's motives for delivering a disconfirming message. One such feature is the personal information disclosed during the interview. For example, all sources reported some personal experience with marijuana. Disconfirming sources might therefore be seen as having been converted from their former opinions, while confirming sources were not. Converts have been found to be effective social influence agents in self-improvement programs such as Alcoholics Anonymous, and they are seen as being expert, open, experience, and warm (20).

6. *Dissonance Reduction*

Aronson (5) proposed a "rule of thumb" stating that cognitive dissonance results when an expectation based on one cognition is disconfirmed by a related cognition. According to this rule, some dissonance should have been aroused in the disconfirmation conditions. Dissonance can be reduced in several ways, but theorists have not agreed on what form the reduction will take in a specific cases. It is not clear why an *S* in this research would reduce dissonance by changing his attitudes to agree with a disconfirming communicator. Since the dissonance was between the expected and actual messages, another mode of tension reduction might be suspicion. When only the hippie and seminarian conditions are considered, of the 13 *Ss* who did not accept the experimental cover story, 10 were in the disconfirmation conditions. For some *Ss*, incongruity was accounted for by finding indications of deception. Disbelief could be an important dependent variable in social psychological research [see Brock and Becker (8)].

Allyn and Festinger (2) suggest that derogation of the source can reduce dissonance. If so, the communicator of an unexpected message would be rated low in sincerity, etc., contrary to the hypotheses and results of this research. Perhaps competing mechanisms were operating in this study, and future

research could establish more clearly the conditions under which a disconfirming source is derogated and when he is well regarded.

This discussion indicates how diverse social psychological theories relate to various phases of this research. The following generalities (which may be limited to college undergraduate populations similar to the one tested in this study) are offered for the sake of summary and integration. Observers form expectations about the opinions of others based on minimal external cues. These expectancies and the consequences of their disconfirmation depend upon (a) observer factors, such as past experience with and initial attitudes toward the source and attitude object, cognitive systems and tolerance of ambiguity and uncertainty, and interest in the attitude object; (b) source factors, such as clarity and salience of role related cues, similarity to the observer, and experience with the attitude object; and (c) situational factors, such as the relevance of source-observer similarity to the issue, magnitude of incongruity, and manner of presenting the disconfirming message. The potential reactions to disconfirmation are manifold and may include questioning the validity of the disconfirmation and source derogation—which reduce message effectiveness—as well as paying more attention to the message, attribution of positive motives to the source, and heightened arousal and susceptibility to external influence—all of which can facilitate message acceptance.

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TEST ANXIETY AND THE BARGAINING BEHAVIOR OF PREADOLESCENT MALES*¹

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SUMMARY

The bargaining behavior and types of agreements reached on a competitive allocation problem by pairs of high and low test anxious preadolescent males (TASC) were examined. Dyads composed of same and opposite type test anxious boys were constituted and one randomly determined member in each pair passed an arithmetic test which made toys available for play. It was hypothesized that the dyads composed of two high test anxious boys would evidence equalitarian tendencies, while those composed of at least one low test anxious member would relatively quickly agree to an equity distribution. The former prediction received support. Unexpectedly, however, the dyads with a low test anxious member more often agreed to nonequitable rather than equitable divisions and did so after prolonged, competitive negotiations. The findings were discussed in terms of differences between high and low test anxious boys in their response to evaluation.

A. INTRODUCTION

The results of a number of recent experimental studies on the reactions of individuals following differential performance as members of successful task oriented groups indicate that males tend to allocate their group's outcome in accordance with the contribution that each has made to the group's reward. Leventhal and his associates (7, 8), for example, reported that the smaller the quantity of work male college students were informed they had contributed toward the attainment of a group goal, the lower was the share of the outcome they took for themselves. The students who were told that their performances were superior to that of their dyadic partners took more than half of the monetary reward, while those told that their performances were inferior took less than half. Benton (4) found that preadolescent mem-

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bers of winning teams (dyads) in an athletic competition preferred reward allocations which favored the higher scoring player. Similar results also have been obtained for preadolescent males following group performance on an academic (reading comprehension) task (2). These findings suggest that males consider productivity to be a relevant and acceptable criterion for reward allocation. They are also consistent with a variety of equity theory conceptualizations (1, 6, 10).

The present investigation focused on the test anxiety (9) of the members of a group as a possible moderator of distributive justice behavior. Examined were the reward allocation decisions arrived at by dyads of high and low test anxious preadolescent males following their differential performance on a group task and the group members' behavior during the negotiations. First, the experimenter showed individual pairs of boys a number of toys of differing attractiveness. The dyad then was informed that each member would have an opportunity to play with a toy if one of them passed a test. Following the criterion (arithmetic) task, one of the boys was told that he had passed the test and the other was told that he had failed. The two boys then were presented with four toy allocation options and told to decide jointly on one of them. Each option favored one boy or the other either greatly or slightly. The results of the above cited studies suggest that the boys relatively quickly would agree to give the more productive member of the group (the "passer") the better outcome. It was anticipated that dyads consisting of at least one low test anxious boy, particularly if he had passed the arithmetic test, would so behave. On the other hand, it was anticipated that the dyads composed of two high test anxious members would behave in a more equalitarian manner and would show more apprehension during the toy allocation session. It was expected that they would be as likely to reach a decision which favored the less productive boy as the more productive one. In addition, it was expected that they would be more likely than low test anxious dyads to agree to as equal an outcome for each member as was possible. Also, more task irrelevant conversation and emotional behavior were anticipated during the negotiation sessions of the high test anxious boys. These latter predictions were based on the premise that high test anxious individuals are fearful of evaluation and are principally motivated to reduce the occurrence of cues associated with evaluation. Although performing well may permit the high test anxious to escape the presentation of aversive stimuli, it is presumed that they find an equal allocation rule to be the more dependable long-term solution. The low test anxious, on the other hand, are presumed to be less concerned with mini-

mizing evaluation, but rather motivated to receive the best possible reward. It was anticipated that they would be more willing to accept a performance based distribution rule. Previous research provides some support for this formulation. Benton (3) found that low test anxious boys who successfully performed a criterion task rated allocations which favored themselves more acceptable than did low test anxious boys who failed to perform adequately. On the other hand, both the high test anxious *productive* and unproductive boys gave the highest acceptability ratings to the equal allocation option.

B. METHOD

The participants were 64 male children who ranged in age from 9 years 2 months to 12 years 7 months. The boys were students in an "open-space" program at the University Elementary School at the University of California, Los Angeles.² On the basis of their scores on the Test Anxiety Scale for Children (TASC) (9) and age and arithmetic ability considerations, eight dyads of low test anxious boys, eight dyads of high test anxious boys, and 16 dyads consisting of one low test anxious and one high test anxious boy were constituted. The children in each dyad did not differ in age by more than two months nor did they grossly differ in arithmetic ability, as rated by their teachers.

The children took the TASC and rank ordered 10 toys in terms of how much they would like to play with them—from three to five weeks before they were brought in pairs, by the author and a female assistant,³ to the experimental area. There, in separate rooms, they rated their previously ranked first-, third-, fifth-, seventh-, and ninth-choice toy. This time the boys rated the toys by placing cards representing each of the five toys at points along the width of a 48-inch-wide table. Placement at the extreme left side of the table indicated that the boy very much wanted to play with that toy, and it was given a rating of 48; placement at the extreme right side indicated that he did not wish to play with that toy, and it was given a rating of 1. Adhesive tape marked off in inches and affixed to the edge of the table indicated the in between values and was utilized by the experimenter to score the boys' ratings.

Both children then were seated at opposite ends of a table in one of the

² Gratitude is due John Goodlad, director; Madeline Hunter, principal, and the teachers of the University of California, Los Angeles, University Elementary School for their cooperation in this study.

³ Acknowledgment is made of the expert help provided by Doreen Moss Fineman and Rickie Sion. Each assisted the author in the gathering of the data with the children and in coding the bargaining tapes.

rooms and handed a pencil and an arithmetic test booklet. The latter consisted of a series of multiplication and division problems similar to those found in their school workbook. After they were told that they would be given 10 minutes to work on the problems, the experimenter concluded by saying:

"If you pass this test, you can play with one of the toys even if the other person does not do well. If you do not pass the test, you will *not* be permitted to play with a toy unless the other person passes the test. He will then be responsible for you having an opportunity to play. If you fail the test, you will be completely dependent upon the other person."

After the children had worked on the task for 10 minutes, the experimenter picked up the tests and, assuming a serious manner, appeared to score their performances. In each dyad one child was told that he had passed the test and the other was told that he had failed. Assignment to the role of "passer" and "failer" in each pair was random except for the restriction that in half the dyads consisting of one low and one high test anxious boy the low test anxious boy was told he had passed. This resulted in the establishment of four experimental groups: low test anxious passer and failer (LL); low test anxious passer and high test anxious failer (LH); high test anxious passer and low test anxious failer (HL); and high test anxious passer and failer (HH).

Next, the children were seated at opposite ends of a bargaining table. Their first- through fourth-choice toys were placed in front of them. The experimenter then told them that the two of them would determine with which toy each of them would get to play. The solutions available to the children in terms of their productivity were the following: a strong equity division, the passer gets to play with his first-choice toy and the failer gets his fourth-choice toy (1:4 agreement); a weak equity division (2:3 agreement); a weak nonequity division (3:2 agreement); or a strong nonequity division (4:1 agreement). (The agreement options were chosen in such a manner as to prevent the children from having a salient, equal outcome, middle solution which might be adopted in order to avoid discussion and without regard for considerations of previous arithmetic test performance.) A partition separated the two boys and prevented them from seeing their classmate's toys as well as each other. Each boy could see his own toys, but only the rank-order number of the toy which the other would receive at the various decision points. The agreement options available to the children were labeled A, B, C, and D. The situation as seen from the point of view of one of the children is shown in Figure 1. After the children had reached a decision, they were allowed to play with their agreed-upon toy for 10-15 minutes before being returned to their class.

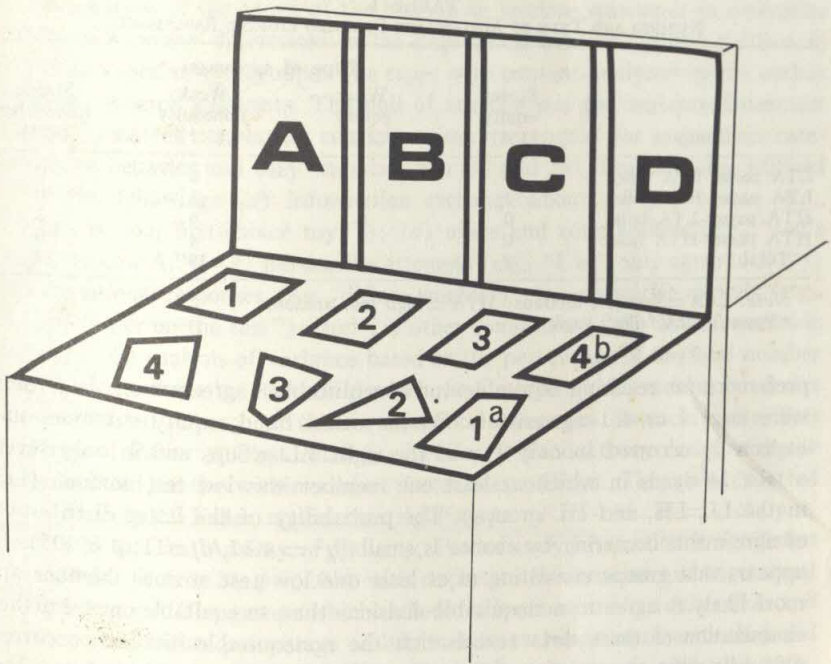


FIGURE 1
BARGAINING SITUATION AS SEEN BY ONE OF THE CHILDREN. THE TOYS (A) WERE CLOSE TO THE CHILD, WHILE THE CARDS (B) INDICATING THE RANK ORDER OF THE TOY WITH WHICH THE OTHER CHILD WOULD PLAY WERE JUST IN FRONT OF THE PARTITION WHICH BISECTED THE BARGAINING TABLE.

C. RESULTS

The mean ratings of the boys' first through fifth-choice toys were 46, 37, 28, 18, and 7, respectively. These values are all significantly different from one another ($F = 19.73$, $df = 4/315$, $p < .001$). The frequency with which the children reached agreement at each of the four decision points is presented in Table 1. If the predominant predispositions were, as predicted, for the low test anxious boys to seek resolution to the allocation problem on the basis of productivity and for the high test anxious boys to be biased toward equality, we would expect the passer to receive a more favorable toy in the LL, LH, and HL groups, particularly in the LL dyads, and there to be neither passer preference nor the occurrence of strong (i.e., 1:4 or 4:1) agreements in the HH groups. As anticipated, the members of the HH groups did not show a

TABLE 1
NUMBER AND TYPE OF AGREEMENTS REACHED DURING BARGAINING

Group	Strong equity (1:4) ^a	Type of agreement		Strong nonequity (4:1)
		Weak equity (2:3)	Weak nonequity (3:2)	
LTA passer-LTA failer	0	2	6	0
LTA passer-HTA failer	2	3	3	0
HTA passer-LTA failer	0	0	6	2
HTA passer-HTA failer	0	4	4	0
Total	2	9	19	2

Note: LTA = low test anxious; HTA = high test anxious.

^a Passer's rank:failer's rank

preference for reaching equitable (or nonequitable) agreements. Also, there were no 1:4 or 4:1 agreements. On the other hand, equity outcomes unexpectedly occurred in only two of the eight LL groups and in only seven of the 24 dyads in which at least one member was low test anxious (i.e., in the LL, LH, and HL groups). The probability of the latter distribution of agreements occurring by chance is small ($\chi^2 = 4.17$, $df = 1$, $p < .05$). It appears that groups consisting of at least one low test anxious member are more likely to agree to nonequitable divisions than to equitable ones. Further examination of these data reveals that the nonequitable divisions occurred primarily when the member of the group who failed the criterion task was low test anxious. In the LL and HL groups, nonequity was the result 87% of the time ($\chi^2 = 9.00$, $df = 1$, $p < .01$). The agreement data also can be looked at in terms of bargaining success and failure. In 13 of the 16 negotiation sessions between a high and a low test anxious boy, the low test anxious boy received a higher-ranked toy. Again the probability of such a distribution of agreements occurring by chance is slight ($\chi^2 = 6.25$, $df = 1$, $p < .02$). (Since one low test anxious boy must "win" in LL groups and one high test anxious boy must "win" in HH groups, it is most appropriate to examine only the dyads consisting of one low and one high test anxious child.) It also appears that success or failure on the achievement test before the negotiations began affected bargaining outcomes. The failers "won" in 21 of the 32 negotiation sessions ($\chi^2 = 3.12$, $df = 1$, $p < .10$). Finally, chi-square analysis reveals that the low test anxious failers received a more favorable toy significantly more often than did the high test anxious failers ($\chi^2 = 6.78$, $df = 1$, $p < .01$). The proportion of "wins" achieved by the low and high test anxious passers, on the other hand, was similar ($\chi^2 = 1.25$, $df = 1$, n.s.).

An analysis of the tapes of the bargaining sessions was made to determine if there were any differences in the negotiation behavior of the children in the four experimental groups. The tapes were content-analyzed by the author and his research assistants. The unit of analysis was the sentence. Interrater product-moment correlation coefficients were computed for each of six categories of behavior and they were between .80 and .86. The categories utilized were the following: (a) information exchange about toy preferences (e.g., "What is your first-choice toy?"); (b) offers and counteroffers (e.g., "Let's agree to pair A."); (c) persuasive attempts (e.g., "I will only agree to B."); (d) emotional responses (e.g., diffuse laughter); (e) normative appeals (e.g., "I did better on the test"); and (f) other comments (e.g., "It's nice outside today"). An analysis of variance based on the percentage of the total number of comments made by each child which were scored in the various categories was computed for each of the six behavioral categories. In each case a Test Anxiety of Passer \times Test Anxiety of Failer \times Productivity design with the dyad treated as the within-subject factor was utilized. The main effect of Test Anxiety of Failer approaches significance ($F = 4.16$, $df = 1/28$, $p < .06$), and the Test Anxiety of Failer \times Productivity interaction is significant ($F = 4.34$, $df = 1/28$, $p < .05$) with respect to information exchange about toy preferences. The groups which included a low test anxious failer (LL and HL) made a higher percentage of information exchange statements than did those which did not (LH and HH). The mean values were 43% and 29%, respectively. In addition, the low test anxious failers prompted a higher percentage of these comments from passers, particularly in the LL condition, than did high test anxious failers, while the low and high test anxious failers did not differ significantly in the percentage of toy preference comments that they made. Analysis of the percentage of offers and counteroffers made by the various groups indicates that they did not differ. However, further analysis of these data with respect to the percentage of the offers made which were extreme (1:4) reveals that the groups which included a low test anxious failer made a higher percentage of this type of offer than did those which included a high test anxious failer (52% vs. 26%, respectively). Additionally, the three-way Test Anxiety of Passer \times Test Anxiety of Failer \times Productivity interaction is significant ($F = 6.34$, $df = 1/28$, $p < .05$). Low test anxious passers made a higher percentage of extreme offers than their partners in the LL condition (62% vs. 30%, respectively), while low test anxious failers made a higher percentage of extreme offers than their partners in the HL condition (65% vs. 49%, respectively). There was no difference in the percentage of this

type of offer between passer and failer in the LH (28% *vs.* 20%, respectively) and HH (31% *vs.* 25%, respectively) conditions. The results with respect to the percentage of emotional responses made by the members of the various groups reveal a significant Test Anxiety of Passer \times Test Anxiety of Failer interaction ($F = 5.27$, $df = 1/28$, $p < .05$). Sighing, laughing, and giggling responses accounted for 13% of the vocal behavior of the groups consisting of a high test anxious passer and a low test anxiety failer, whereas the other groups evidenced, on the average, less than 3% of this kind of behavior. Finally, the groups which included a high test anxious failer made a significantly higher percentage of task irrelevant comments ($F = 5.76$, $df = 1/28$, $p < .05$). This was particularly true in the HH groups where 39% of the boys' comments were task irrelevant.

The time required for the various types of dyads to reach a decision was also examined. Again, the main effect of Test Anxiety of Failer is significant ($F = 5.34$, $df = 1/28$, $p < .05$). The mean bargaining time for the LL and HL groups was 310 seconds and 325 seconds, respectively, and that for the LH and HH groups was 175 seconds and 100 seconds, respectively.

In sum, the bargaining behavior results indicate a number of differences between the groups consisting of low test anxious failers and those consisting of high test anxious failers. In the former, the bargaining sessions were longer, a majority of the offers made were extreme, a higher percentage of the comments involved the communication of toy preferences, and there was relatively little task irrelevant conversation. It also may be recalled that the low test anxious failers "won" more often than the high test anxious failers.

D. DISCUSSION

If it is assumed that the participants perceived that their contributions to the group reward were equal with the exception of their differential productivity on the criterion task, the results clearly are not consistent with the straightforward nomothetic predictions of equity theory. The boys did not agree to give the more productive member in each group the better outcome. Rather, as expected, the test anxiety of the members of the group affected their reward allocation behavior. In the groups composed of only high test anxious individuals the less productive member received a higher-ranked toy as often as the more productive boy. In addition, a relatively high proportion of the behaviors of the members of these groups was task irrelevant. These results provide some support for the proposed "evaluation minimization" hy-

pothesis. They also may be considered from other theoretical perspectives. [The participants in the present study may have felt (correctly) that they and their teammates were of about equal ability and that superior performance on the criterion task was basically a matter of luck. Under such circumstances passing the arithmetic test may not have been seen as a relevant basis for differential reward allocation. It is also quite possible that the win-lose configuration of the toy options resulted in the bargaining task being perceived as another (second) achievement evaluation situation. In addition, the presence and positioning of the toys during negotiations may have focused the attention of the boys on winning and thus masked equity considerations.] The pattern of negotiation outcomes in the HH, HL, and LH groups may be interpreted in terms of attention deficit theory. Wine (11), after reviewing the literature on test anxiety, concluded that high test anxious persons typically perform more poorly than low test anxious persons on tasks conducted under evaluative conditions because they do not totally attend to the task but rather divide their attention between the task at hand and certain presumed negative or undesirable characteristics of themselves. Ganzer (5), for example, reported that high test anxious scorers, particularly when told they were being observed, did significantly more poorly on a serial learning task than did low test anxious scorers. They also emitted significantly more task irrelevant self-devaluation responses in the experimental situation. The results obtained in the present study in the groups containing at least one high test anxious member may be a reflection of less efficient and effective bargaining task behavior on the part of the high test anxious participants. When their teammate-opponent is low test anxious (and presumably more task oriented), the high test anxious would be expected to get a lower ranked toy. They did. When two high test anxious boys are paired, the outcome should be determined by chance. In a sense, each boy's relative preoccupation with his personal attributes should result in bargaining success by default.

The most unexpected finding obtained in the present study was the bargaining success of the low test anxious boys who failed the arithmetic test. Benton (3) has reported that low test anxious boys tend to rate high test anxious teammates as less potent and more friendly than boys like themselves. Perceptions such as these may have encouraged the low test anxious failers to anticipate and seek victory against the high test anxious passers on the competitive reward allocation task and might explain their competitive and persistent negotiations behavior and bargaining success in the HL groups.

This approach (and the equity and efficiency interpretations), however, still leaves us with the problem of explaining the behavior of the participants in the LL groups. The success of the low test anxious failers in the LL groups does not appear to be due to altruism, empathy, or generosity on the part of the low test anxious passers. The LL negotiations were long and a majority of the demands made by the low test anxious passers were extremely advantageous to themselves. Rather, the author believes that the bargaining task was perceived by the low test anxious failers as competitive and providing them with an opportunity to compensate for their inadequate performances on the arithmetic test. Perhaps they were motivated to restore their self-esteem and/or re-establish a balance in their relationship (e.g., power) with their teammate. This does not seem unreasonable, particularly if they felt that they and their teammates were similar. It also is probable that they believed they had a moderate chance for success on the conflict of interest task. In any case, it appears that, at least under the conditions examined here, telling a low test anxious boy that he has failed to perform as well as a more productive teammate tends to heighten his approach success tendencies. More generally, the results suggest that the reward allocation bargaining behavior of group members is affected by more than the differential productivity of each individual.

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THE EFFECTS OF FACTUAL VS. EMOTIONAL WORDING IN PRINTED ACCOUNTS OF VIOLENCE ON AGGRESSION*

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SUMMARY

Ninety male college students, half of whom had been previously angered by insult, participated in an ostensible ESP experiment supposedly involving electric shock for incorrect responses after being exposed to printed accounts containing nonviolent, factual-violent, or emotional-violent material. Subjects exposed to emotional violence gave significantly higher shocks than subjects exposed to factual violence. This difference was attributable largely to subjects receiving prior insult and not to subjects in the no-insult condition. Insulted subjects gave significantly lower shocks than noninsulted subjects, and in fact decreased their shock level in comparison to their pretest scores, but insulted subjects subsequently exposed to emotional violence did not decrease their shock level as much as subjects who were insulted and exposed to factual violence.

A. INTRODUCTION

Experiments using television programs (6), cartoons (12), and film strips (1, 3) have shown that witnessed violence can increase the probability that the viewer will act aggressively. It may be that witnessed violence facilitates the acquisition of new aggressive responses as a result of the viewer's imitating the aggressor's actions (2). It also appears that exposure to violence, especially justified violence, may reduce the viewer's inhibitions against aggression (4).

Lovaas (10) found that among children increases in nonverbal aggressive behavior may also occur following reinforcement of aggressive verbal behaviors. One possible explanation of these results offered by Lovaas is that reinforcement of aggressive verbal behaviors results in extinction of conditioned aversive stimuli associated with aggression. Increases in aggressive

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behavior have also been observed in college students who had previously been reinforced for selecting aggressive words from a list (9).

"Aggressive words" are frequently found in news stories and literature in which violent events are related, since description is one of the major tools of the writer. Emotionally worded accounts which vividly portray violent occurrences contain more aggressive words than factually worded printed accounts. Reinforcement for reading aggressive words would not likely be a necessary prerequisite for aggressive behavior to occur, since results with visually witnessed violence indicate that mere exposure is sufficient, especially for subjects who had previously been anger-aroused by insult (4). Similar results have been obtained by Scharff and Schlottman (13) using audiotapes of news broadcasts.

The importance of "emotional loading" in printed accounts of violence is emphasized as a result of preliminary studies by Tannenbaum [cited by the Surgeon General's Scientific Advisory Committee on Television and Social Behavior (14), p. 119] who has questioned the assumption that exposure to violence *per se* is responsible for the observed increase in instigation to aggression. Tannenbaum exposed subjects to erotic, humorous, aggressive, or neutral videotapes of filmed material. Measures of aggressive behavior included the subject's willingness to administer electric shocks or to give negative ratings that might jeopardize another's career. Exposure to erotic or humorous material resulted in greater aggressiveness than exposure to neutral material, and exposure to erotic material resulted in greater aggressiveness than exposure to aggressive material. These results suggest the arousal capability of the material may be a more important determinant of subsequent aggressiveness than content. Tannenbaum's results do, however, indicate that exposure to aggressive material increases the instigation to aggression.

The present student study was designed to explore the effects of printed accounts of violent occurrences on the tendency to aggress and to determine if the "emotional loading" of the printed account would affect the intensity of the induced aggression. It was hypothesized that subjects exposed to printed accounts of violence would behave more aggressively than subjects exposed to nonviolent material, especially if they were predisposed to behave aggressively as a result of prior anger-arousing insult. It was also hypothesized that exposure to emotionally worded accounts would result in greater aggressiveness than exposure to factually worded accounts of violent events.

B. METHOD

1. *Subjects*

Two hundred seventy male, freshman and sophomore college students from introductory psychology classes at Oklahoma State University participated in an initial phase of the study. The initial phase was designed to add credibility to the statement that an extrasensory perception experiment was being conducted, and it involved asking students in a classroom setting to concentrate and attempt to "pick up" the color of each of a series of cards as a confederate at the front of the class concentrated on it. Ninety subjects were randomly selected from the larger group. They were told that they had scored above average on the preliminary experiment and agreed to participate in an "additional study" also involving extrasensory perception.

2. *Apparatus*

A "shock" apparatus similar to the one used by Buss (5) was used. It is a 12.5" \times 24.5" \times 12.5" black box-shaped structure with 10 levers numbered from left to right on the front panel. The extreme left lever was labeled "mild," and the extreme right one, "strong." A separate lever, designated as "ready," was located in the middle of the panel below the 10 levers. Connecting wires extending from the apparatus to a small board in adjoining room that contained a series of lights corresponding to the levers. A microphone and speaker were employed to permit one-way communication from the adjoining room to the room containing the aggression machine.

3. *Procedure*

The subject was informed that the purpose of the experiment was to determine the effect on extrasensory perception when an individual is threatened with shock, and he was given an opportunity to withdraw from the experiment if he objected to the use of shock. He was told that he would be the "transmitter" in the experiment and that a student from another class (in actuality the experimenter's confederate) who was attached to the shock apparatus in the next room would be the "receiver." To avoid the subjects' forming initial impressions of the confederate which might later seem incongruous with the confederate's behavior during the insult procedure, the subject and confederate were kept in different rooms and did not meet during the experiment.

A pretest measure of the subject's level of aggression was obtained at the

beginning of the session. The subject was given a set of 12 colored cards and was told to concentrate on them in the order presented. He was then told that when he was concentrating on a color to signal the receiver by pressing the "ready" lever on the apparatus. The receiver would then respond by means of a microphone. The subject's task was to respond with any desired intensity of shock on incorrect responses. He was also told that none of the shocks would be severe enough to hurt anyone seriously. No shocks were actually given. As the subjects pressed the levers, a light corresponding to the lever pressed lit up on the confederate's panel. The confederate responded in a predetermined order such that only two of his responses would be correct and 10 incorrect. After allowing two practice trials, the experimenter left the room, supposedly so that the subject could concentrate, and asked the subject to call him when he finished the set.

After completion of the set, half of the subjects were insulted by the confederate over the microphone. The confederate complained about the subject's poor performance and called on the subject to try concentrating next time. The other half of the subjects were not insulted and proceeded directly to the second task.

The second task was explained to the subject as a situation in which he and the receiver would both be concentrating on the same thing. He was told that previous research suggested that simultaneous concentration on certain types of material might enhance ESP abilities. To insure concentration, he was told he and the receiver (confederate) would be tested on the material. The subject was then asked to read one of three literary selections: (a) a short selection of nonviolent material; (b) a short selection of literature describing a violent event in a factual manner; or (c) a short selection of violent literature with heavy emotional overtones. Each selection was approximately two and a half pages in length, typed doublespaced. The nonviolent selection was taken from a newspaper account of the elements involved in preparing for the opening of a state fair. It involved problems of handling parking, taking care of the fair grounds and buildings, and loading and unloading of trucks and vans, care of animals, and the other similar details. The factual and emotional selections were reworded accounts of the Boston Strangler's eighth murder. The factual account stated simply that the body of a young girl had been discovered, who discovered the body, and that she had been stabbed. The account went on to state the circumstances leading up to the discovery of the body, where she had been employed, her educational background, the last time she was seen alive, and similar details. The emotional

account described how the city was near panic, used words and phrases such as "terribly sad," "pathetic," and paralyzed with horror," and provided a detailed vivid description of the body, its position, location of stab wounds, and similar items. Twenty graduate students in psychology and related disciplines had previously ranked the three accounts in terms of the amount of violence depicted. A significant degree of agreement was found to exist between the rankings by means of the Kendall coefficient of concordance ($W = .88, p < .01$). The judges' rankings corresponded to the descriptions of the articles in the study.

The subject answered the five multiple choice items that he had been told he would be given to insure concentration, and then a posttest measure of his level of aggression was obtained. The task was presented ostensibly to determine if "thinking together" on the preceding tasks had enhanced extra-sensory perceptions as had been suggested by previous research.

C. RESULTS AND DISCUSSION

The means of the 10 pretest and 10 posttest shock levels were obtained for each subject, and the data were analyzed in a 2×3 analysis of covariance (insult or no insult by type of printed account read). The means and standard deviations for each group on the pretest and posttest shock tasks are presented in Table 1. It was found that the insulted subjects gave significantly lower shocks on the posttest shock task than noninsulted subjects ($F = 15.31, df = 1/83, p < .01$). Several *a priori* orthogonal comparisons were also performed to investigate the differences between the experimental (factual- and emotional-violent accounts combined) and control (nonviolent account) group,

TABLE 1
MEANS AND STANDARD DEVIATIONS ON THE PRETEST AND POSTTEST SHOCK TASK
ADMINISTERED BY INSULTED AND NONINSULTED SUBJECTS EXPOSED TO
NONVIOLENT, FACTUAL-VIOLENT, AND EMOTIONAL-VIOLENT ACCOUNTS

Group	Pretest		Posttest		Mean difference (posttest minus pretest)
	\bar{X}	SD	\bar{X}	SD	
Insult					
Nonviolent	4.53	1.05	3.43	1.69	-1.10
Factual violent	5.27	1.24	3.99	1.91	-1.28
Emotional violent	5.10	1.30	4.91	1.47	-.19
Noninsult					
Nonviolent	4.39	1.42	4.66	1.68	+.27
Factual violent	3.32	1.55	3.79	1.80	+.47
Emotional violent	5.13	.80	5.63	1.07	+.50

and between the two experimental groups themselves. There were no significant differences between the experimental and control groups (for insulted subjects, $t = .99$, $df = 83$, $p > .05$; for noninsulted subjects, $t = .37$, $df = 83$, $p > .05$; for insulted and noninsulted subjects combined, $t = .97$, $df = 83$, $p > .05$). However, subjects exposed to the printed account of emotional violence administered significantly higher shocks on the posttest than subjects exposed to the factual account ($t = 2.02$, $df = 83$, $p < .05$).

The finding that insulted subjects in the present study administered less intense shocks than noninsulted subjects on the posttest shock task, and in fact gave lower shocks than they had on the pretest measure, is contrary to previous results obtained by Geen and Berkowitz (8), Geen (7), and Scharff and Schlottmann (13). During an informal debriefing period following the experiment, many subjects tended to believe that the confederate's insult toward them as poor transmitters was valid and deserved, even though they had been told by the experimenter that the confederate was no more experienced in ESP than they. Such a conclusion is understandable when it is in an area in which the subjects had few reference points to guide them. The previous studies cited above that employed insult had primarily directed the insult against the subject's intelligence or intellectual ability—an area in which the individual had both experience and a stake in the outcome to guide his response. The anger-arousing effects of insult may have been offset by intimidation resulting from the subject's low level of ego-involvement in their supposed ESP ability.

The significant difference between the factual-violent and emotional-violent groups was due largely to the differences between subjects in the insult conditions (see Table 1.). Although insulted subjects gave lower shocks than noninsulted subjects generally, insulted subjects subsequently exposed to emotionally worded printed accounts of violence did not decrease their shock level as much as subjects who had been insulted and exposed to factual accounts. The relative differences in shock level administered by insulted subjects in the factual- and emotional-violent groups is in agreement with Tannenbaum's conclusion that the arousal capability of the violent material, rather than content, was largely responsible for the observed increase in aggression generally. It appears that violent events could be described without reducing inhibitions against aggression if such events were presented in a straightforward manner without vivid description and without the use of stimulating words and phrases designed to appeal to the emotions of the reader.

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THE EFFECTS OF HECKLING AND MEDIA OF PRESENTATION ON THE IMPACT OF A PERSUASIVE COMMUNICATION*¹

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SUMMARY

Distraction has been suggested as a mechanism which will facilitate attitude change. Heckling is a standard procedure used by members of society to distract from the content of a speech. The current study presented a persuasive message to six groups of students. Three of these groups received the message straight, while the other three groups received the message with heckling. A second variable, the medium of presentation, was utilized so that one group in each of the two presentation procedures received either a live presentation, a video presentation, or an audio presentation. The results indicate that the message was effective in changing attitudes. However, when the speech was heckled, the message elicited no attitude change. Further, the audio presentation was more effective than both the video and the live presentation. The results were interpreted in terms of distraction theory and media effects.

A. INTRODUCTION

The impact of persuasive communications on individuals who are experiencing external distraction has been a focus of extensive recent research with American subjects. Festinger and Maccoby (2) noted that a person who is strongly committed to an opinion, if listening to an attack on his beliefs, will subvocally counterargue and deflate the opposing opinion being advocated. Consequently, any interference with these subvocal counterarguments results in the persuasive attack having a greater impact. Subsequent research has produced contradictory findings on this distraction-acceptance phenomenon. Specifically, Breitrose (1), using the same distraction as Festinger and Maccoby, failed to replicate the distraction-acceptance phenomenon. Several other researchers (11, 12) have also reported a failure to replicate. However, empiri-

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cal replication of the distraction-acceptance phenomenon has been reported by Rosenblatt (10), who found moderate distraction facilitated acceptance more than strong distraction. Kiesler and Mathog (5) also substantiated the phenomenon, but only when message sources were highly credible.

Zimbardo, Synder, Thomas, Gold, and Gurwitz (15) noted the large variety of ways in which distraction has been manipulated in past studies. Each manipulation has elicited different amounts of attention, with little control over the subjects' attention to the message source. The result is a range of discrepant findings. Zimbardo *et al.* (15) showed that the attention of the subjects could be focused on one or the other, or neither of the two tasks presented as the communication and the distraction. They also found that the focus of attention of the audience is an important determinant in attitude change.

Typically, previous studies had subjects listen to a persuasive communication and simultaneously attend to a distracting stimulus. The distractions have included an irrelevant film (1), geometric and arithmetic problem solving (12), and a panel of flashing lights (9). It is doubtful that these distractions would be a factor in attitude change outside the laboratory. The present research investigated heckling as a presumed factor in the impact of a persuasive message. If the distraction-acceptance hypothesis is applied to heckling as the source of distraction, it would predict an increase in the attractiveness of a persuasive message, i.e., the opposite of the effect that the proponents of heckling expect and desire.

The current study, noting the findings of Zimbardo *et al.* (15), attempted control of distraction to insure that subjects knew their primary task was to focus on the persuasive message. This was achieved by matching the distraction to a believable context. The experimental situation had subjects listen to a speech with potential personal political ramifications while they were being distracted by moderate heckling of the speaker. Both the type of message and the type of distraction were previously, directly or indirectly, experienced by all the subjects.

The majority of the previous experimental research on attitude change has presented the persuasive message with the use of audio tape. The advantages of practicality and control are understandable motivating reasons for restricting research to audio tapes. However, contemporary exposure to persuasive messages outside of the laboratory is more generally associated with video presentations. Indeed, Klapper (6) notes that the visual media command much greater attention, while audio media (particular radio) are most

casually attended and now used more as a background source. Further, McLuhan (8) contends that the medium has more impact than the message it carries. It is therefore surprising that the question of the comparative effectiveness of media has attracted little basic research of an empirical nature. Wilke (14) found that a speech heard live produced more opinion change and less hostility than did the same speech heard via a loudspeaker. However, the research on hypnosis and suggestibility indicates that compliance can be obtained equally as well by a physically present source as by a recording (4). More recently, McGuire (7) concludes that informal face-to-face communication of people with primary groups has a greater impact than the media.

The present experiment attempts to control systematically the media of presentation, either live, video, or audio. It was hypothesized that the live presentation would be more effective than both the video and audio presentation in producing attitude change. The principal hypothesis on the effects of distraction was that distraction would increase acceptance of the message under each of the three media conditions.

B. METHOD

One hundred sixty-eight introductory psychology students at the University of San Francisco were exposed to a persuasive communication which advocated government control of population by means of taxation procedures. Subjects initially completed a questionnaire, which measured their attitudes toward the communication topic, as part of a class project. Approximately four weeks later, subjects listened to the communication under one of six conditions. Subjects hearing the communication were told that a student in a Dynamics of Speaking course had requested to challenge the class for credit. Part of the teacher's evaluation of him consisted of judging his effectiveness when giving a persuasive speech to an audience. The postquestionnaire would assist in judging the results of his ability. The evaluating teacher was not present during the speech.

One hundred forty-four subjects were randomly assigned to one of the six conditions with 24 subjects in each group. Three of these groups heard the communication with heckling: by live presentation, by video presentation, or by audio presentation. Three other groups heard the communication straight—i.e., without heckling—either live, by video, or by audio.

The hecklers were six students known to the researchers, who were part of the regular class that was to hear the communication live with heckling, and practiced with the speech and speaker prior to the experiment. The speech

was given live, and a video and audio recording was made for use in the other conditions. The heckling was programmed so that speeches in all conditions were about the same length (10 minutes), and every attempt was made to match the speeches in every aspect except for the heckling variable. Because of the addition of hecklers in one of the live conditions, additional students were present in each of the groups so that the audience size was equivalent under each condition, with 24 real subjects receiving the message.

The communication advocated using taxation as a mean of population control. Initially, the speaker pointed out the rising world population and the consequences of uncontrolled population growth. It was then suggested that the taxation system favors larger families, since the larger the family, the larger the tax deductions that are allowed. The alternative of increasing the amount of taxation as the family size increased was then argued. The heckling consisted of boos, sneers, and catcalls with some of the hecklers making loud side comments about some point made by the speaker. There was no direct verbal communication between the speaker and the audience.

Following the presentation of the communication, all subjects completed a questionnaire designed to measure their attitudes toward government control of population through taxation, measure recall of the material, and provide an evaluation of the speaker. The remaining group of 24 subjects, comprising the control group, recompleted the questionnaire given four weeks earlier without hearing any communication.

C. RESULTS

All subjects correctly recalled the content questions. Further, in all of the conditions the speaker was rated at an equivalent level. A correlated t test on the data from the control group found that attitudes did not generally change over the period of the experiment. ($t = .98$, $df = 23$, $p > .05$).

Figure 1 shows the mean level of attitude change in each of the three media and two distraction conditions. The data were analyzed by means of a three factor analysis of variance with repeated measures on the attitude factor (13). The analysis yielded a significant F (1,138) of 4.31 ($p < .05$) for the effects of heckling. The results showed that the straight speech was effective in producing attitude change, while the addition of heckling minimized attitude change. This effect was the opposite of the hypotheses.

Further, the medium of presentation had an effect on the amount of attitude change [F (2,138) = 3.45, $p < .05$]. The greatest effect was obtained by the audio presentation of the message. This was significantly greater than both

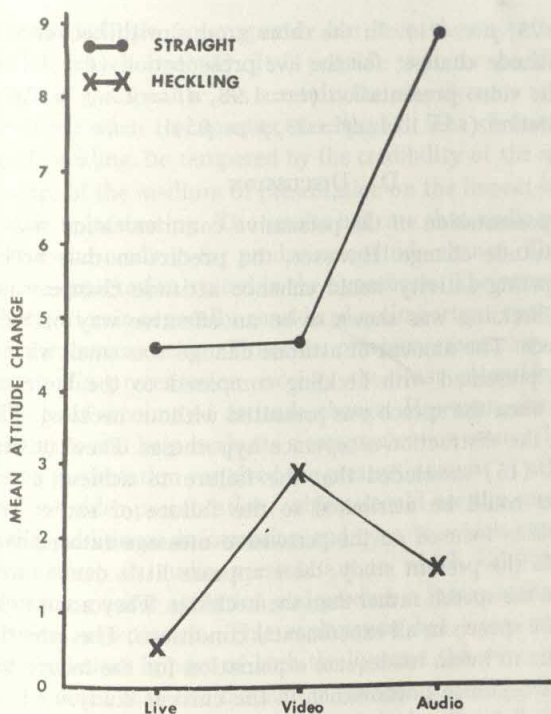


FIGURE 1
MEAN LEVEL OF ATTITUDE CHANGE IN EACH OF THREE MEDIA AND TWO DISTRACTION CONDITIONS

the video presentation ($t = 1.75$, $df = 46$, $p < .05$) and the live presentation ($t = 2.14$, $df = 46$, $p < .05$). While the data indicate that the video presentation produced more attitude change than the live presentation, this effect was not statistically significant ($t = 1.56$, $df = 46$, $p > .05$).

The within subject analysis indicated that there was an overall difference between the first and second measures of attitude [$F(1,138) = 5.21$, $p < .05$]. The triple interaction effect between the three factors was also significant [$F(2,138) = 3.12$, $p < .05$]. All other effects were not statistically significant. Subsequent correlated t tests for each experimental group showed that there was a significant attitude change in the three groups without heckling; for the live presentation ($t = 2.55$; $df = 23$, $p < .05$); for the video presentation ($t = 2.43$, $df = 23$, $p < .05$); and for the audio presentation

($t = 2.96$, $df = 23$, $p < .01$). In the three groups with heckling, there was no significant attitude change; for the live presentation ($t = 1.41$, $df = 23$, $p > .05$); for the video presentation ($t = 1.98$, $df = 23$, $p > .05$); and for the audio presentation ($t = 1.11$, $df = 23$, $p > .05$).

D. DISCUSSION

The straight presentation of the persuasive communication was successful in promoting attitude change. However, the prediction that heckling as a distracting competing activity would enhance attitude change was not supported. Indeed, heckling was shown to be an effective way of reducing the impact of a speech. The amount of attitude change was small when the communication was presented with heckling compared to the large amount of attitude change when the speech was presented without heckling. This finding fails to support the distraction-acceptance hypotheses. Previous research by Zimbardo *et al.* (15) concluded that the failure to achieve a distraction-acceptance effect could be attributed to the failure of earlier research to ensure that subjects focused on the persuasive message rather than the distracting tasks. In the present study, there appears little doubt that the subjects attended to the speech rather than the heckling. They accurately recalled the content of the speech in all experimental conditions. The attention factor, therefore, appears to be an inadequate explanation for the failure to replicate the distraction-acceptance phenomenon in the current study.

Typically, the distraction task is presented or completed continuously and simultaneously with a persuasive message. However, here the heckling was a sporadic rather than continuous distraction. This difference might be argued as being responsible for the distraction's failure to enhance attitude change. However, Rosenblatt (10) found that moderate distraction was more effective than strong distraction in enhancing attitude change. Further, it does not account for the reduction in the influence of the communication.

Since the communication was presented to a group of subjects, awareness of some group support could reduce the impact of the persuasive communication. This argument is used by Osterhouse and Brock (9) in support of their contention that validation of the acceptance-distraction phenomenon requires that subjects complete the experiment individually. Some kind of social comparison process seems an acceptable explanation for the subjects' resistance to influence when the distraction is heckling. There is little doubt that heckling is an effective way of informing others on how a portion of the audience feels and provides specific information on which social comparison can be made.

Further, the credibility of the speaker has been shown to be an important variable in attitude change (3). It is possible that the heckling undermined the credibility of the speaker. As a result, the effectiveness of communication would be reduced when the speaker was heckled. The distraction effect may, in the case of heckling, be tempered by the credibility of the speaker.

The influence of the medium of presentation on the impact of the persuasive communication is interesting. The results indicate that audio presentation was the most successful medium for producing attitude change. This finding is the opposite of the expectation stated in the hypothesis. The reason for this result is unclear. Attention is generally considered an important variable in the effectiveness of a communication. However, previous researchers (e.g., 6) have argued that audio presentation receives the least attention and therefore produces the least amount of attitude change. However, since subjects were asked to attend to and help evaluate a communication source, it can be argued that the audio presentation required the greatest amount of attention. In both the live and the video presentation, subjects could see the speaker. Thus they were receiving additional information and cues to which they were also attending. Therefore, an audio presentation to which subjects are asked to attend may elicit greater attention and produce a larger attitude change than a live or video presentation. This explanation has some support from the statistically equivalent impact of both the live and the video presentations. It should also be noted that the medium of presentation did not affect the subjects' rating of the speaker. This indicates that the physical characteristics of the speaker had little or no confounding effect on the medium variable.

The audio medium has been used most frequently in previous research. However, the effectiveness of the audio presentation in this study raises several important questions about tendencies to generalize these effects to other media of presentation, for live and video media were shown to be less effective than the audio medium of presentation. This suggests the need for exploring systematically the effects of different media on other variables previously shown to effect attitude change. However, any further exploration of media effects should take into account the physical and presentation characteristics of the speaker.

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SELF-CONCEPT SUPPORT AND FRIENDSHIP DURATION*

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SUMMARY

Members of friendship dyads at levels of short acquaintance or long acquaintance made intelligence attributions for self and friend, and predicted their rating by the friend. Comparisons between these perceptions and "actual" intelligence suggest that self-concept support is a more reliable feature of friendship than is perceived similarity, or "actual" similarity, or even similarity between friends' self-concepts. The role of perceived similarity appears to diminish as friendship persists, whereas the role of perceived self-concept support takes on added psychological significance for enduring friendships.

I. INTRODUCTION

In a paper which emphasizes the impression management aspects of social interaction, Helm (9) has suggested that assessments of social interaction should always include at least three viewpoints: (a) an individual's feeling about his own abilities and motives; (b) his opinions about the abilities and motives of his interaction partner; and (c) his estimate of the abilities and motives attributed to him by his interaction partner. These are, respectively, perceptions of self-concept, of interpersonal similarity, and of self-concept support. Nearly all studies of interpersonal attraction have limited their consideration to only one or at most two of these perceptual perspectives, or have ignored perceptions altogether by emphasizing the "reality" presumed to underlie perceptions. For example, many of the early studies of interpersonal attraction (5, 6, 8, 13, 14) reported a basis for attraction in the objectively measurable similarity of traits and needs. A second generation of investigators (10, 11, 15) introduced a phenomenological approach by finding either actual similarities in reported self-views or perceived simi-

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larities on trait dimensions underlying interpersonal attraction. In a separate line of inquiry, Secord and Backman (17) have shown that an individual tends to like those perceived as supporting his own self-concept. They called this self-concept support "interpersonal congruency" and found it to be associated with perceived similarity as a predictor of interpersonal attraction. Thus, the perceptual (or phenomenological) basis for interpersonal attraction is by no means clear, but it is obviously complex.

Bailey, Vance, and Helm (4) recently studied the role of self-concept, perceived similarity, and perceptions of self-concept support in "romantic" attraction by obtaining self and interpersonal attributions of intelligence in dating couples. Members of dating couples at each of three levels of commitment (occasional date, steady date, or engaged) gave estimates of their own intelligence, their date's intelligence, and how they expected to be rated on intelligence by their dates. The results showed that individuals at each of the three levels of dating commitment tended to perceive their date as sharing their own self-view (self-concept support), while ratings of self and of date (perceived similarity) were not significantly correlated at any of the three levels. Thus, self-concept support was a reliable constituent of "romantic" attraction, but perceived similarity was not, in contrast to Secord and Backman's (17) report that attraction in laboratory dyads was apparently related to both perceptions.

The present investigation was conducted to analyze the roles of the three perceptual perspectives in varying durations of friendship attraction in American college students. Bailey, Finney, and Bailey (3) have demonstrated that perceived intelligence is a factor in friendship choice.² For this reason, and because perceptions of the trait of intelligence were shown by Bailey, Vance, and Helm (4) to be associated with enduring commitment to a dating relationship, the present research investigated the relationship between intelligence attributions. Members of friendship dyads at one of two levels of friendship duration (short acquaintance or long acquaintance) made intelligence attributions for self and for their friend, and predicted how they would be rated on the same trait by the friend. These perceptions were compared to each other and to "actual" intelligence as measured by the *Otis-Lennon Mental Ability Test*. The study was conducted to test the proposition that "real-world" attraction relationships

² Portions of the present study are a reanalysis of data present in Bailey, Finney and Bailey (3).

may be more dependent upon phenomenological perceptions of self-concept support than upon either actual or perceived trait similarity.

B. METHOD

1. Subjects

Fifty introductory psychology students volunteered for the study and agreed to bring to the test session a friend of the same age, sex, and class rank as themselves. Thus there were 100 subjects. Individual members of the friendship dyads were tested concurrently in separate rooms. Each subject gave an estimate of the duration of the friendship. These data were divided at the median. The upper 50% of the distribution were assigned to the Long Acquaintance Group ($\bar{X} = 74.52$ months), and the lower 50% were assigned to the Short Acquaintance Group ($\bar{X} = 6.13$ months).

2. Rating Scales and Procedure

All subjects estimated their own intelligence (Self subscale), their friend's intelligence (Friend subscale), and the intelligence attributed to them by their friend (Friend's Estimate subscale)³ on 10-inch subscales of the Self-Rating Scale of Intelligence (3). Each subscale was sectioned so as to approximate the normal probability curve. Sections of each scale were designated but not captioned on the actual rating scale. Below the actual rating scale a similarly sectioned scale was captioned with the phrase "Far Below Average" on the extreme left section (corresponding to the normal distribution area of the third standard deviation below the mean), proceeding through "Below Average," "Average," and "Above Average," with "Far Above Average" (corresponding to the normal distribution area of the third standard deviation above the mean) anchoring the extreme right section of the scale. Subjects were asked to indicate by a mark on the uncaptioned scales the intelligence of self, of friend, and of self-by-friend's-rating. Each 10-inch subscale allowed measurement of raw scores from zero through 100, corresponding to the number of 1/10-inch units from the left of the scale to the location of the subject's mark. Immediately following the administration of the Self-Rating Scale of Intelligence, the *Otis-Lennon Mental Ability Test* was given to assess "actual" intelligence.

³ Based on a retest following a two-week period, Pearson product-moment correlation coefficients of stability for the three intelligence subscales were as follows: Self subscale = .83; Friend subscale = .81; Friend's Estimate subscale = .68.

C. RESULTS

The proposition upon which the study was based was supported. Data from the friendship pairs showed a more reliable effect of self-concept support than of perceived similarity, or of "actual" similarity, or even of similarity between friends' self-concepts. Friends' self-concept reports were effectively uncorrelated in either the Long Acquaintance Group ($r = -.12$) or the Short Acquaintance Group ($r = +.27$). The somewhat higher (but nonsignificant) level of correlation for pairs at the Short Acquaintance level suggests that actual intelligence may be a more reliable component of newer friendships than of older ones.

The extent of the perceived similarity correlations was strongly associated with friendship duration. For the Short Acquaintance Group, scores on Self and Friend subscales (perceived similarity) correlated significantly ($r = +.37, 48 \text{ df}, p < .01$), although a nonsignificant relationship ($r = +.23$) was obtained on these measures in the Long Acquaintance Group. Thus, those in the Long Acquaintance Group did not perceive their friend as being similar to them on the intelligence trait. The clear suggestion is that people can like others whom they regard as being different from themselves. To the extent that this may be so, a popular idea of interpersonal attraction—i.e., perceptions of similarity—is weakened as an element in a predictive model of social interactions.

Self-concept support may be a more reliable correlate of interpersonal attraction. In the present study, friends of both short and long acquaintance tended to perceive each other as agreeing with their own self-rating of intelligence. Highly similar ratings were given on the Self subscale and on the Friend's Estimate subscale by persons in both the Long Acquaintance Group ($r = +.82, 48 \text{ df}, p < .001$) and the Short Acquaintance Group ($r = +.52, 48 \text{ df}, p < .001$). Fisher's r to Z transformation was made on each of these correlations, and the difference between them was tested. The correlation between the Self subscale and the Friend's Estimate subscale was significantly greater for the Long Acquaintance Group than for the Short Acquaintance Group ($Z = 2.81, p < .01$), indicating that the longer the acquaintance, the greater the correlation between these perceptions (or their subscales). This indicates that a direct relationship exists between length of friendship and perceived extent of self-concept support.

The evidence thus suggests that perceived similarity is more likely to serve as a friendship bond in new or recently formed friendships (labora-

tory based "friendship" dyads, especially those of an *ad hoc* nature, would perhaps fit into this category) than in older or "mature" friendships. It also appears likely that as the role of perceived similarity diminishes (as friendship persists), the role of perceived self-concept support takes on added psychological significance for the friends.

D. DISCUSSION

Secord and Backman (17) found that self-concept support and perceived trait similarity were nearly equally effective as predictors of interpersonal attraction. The present study found self-concept support to be the most reliable correlate of friendship attraction in the U. S. college students studied, thus paralleling the Bailey, Vance, and Helm (4) study of romantic attraction. Self-concept support has been shown to be a significant feature of both short and long friendships and short and long dating relationships. The present friendship data indicate that self-concept support increases with length of friendship. It cannot be said from these data whether the increasing relationship results from a subjective requirement for greater self-concept support in longer friendships, or because one person may simply feel that the longer his friend knows him the more likely it is that he is seen as he sees himself. Nevertheless, that self-concept support increases as the length of a friendship increases has been clearly demonstrated.

On the other hand, this study found perceived trait similarity to characterize only shorter friendships. In a recent laboratory study which used Byrne's (7) attitude-similarity attraction paradigm, Merrifield and Helm (12) found that perceptions of self-concept support and attitude similarity are equally predictive of interpersonal attraction. High attitude similarity yielded perceptions of both high self-concept support and high attraction on Byrne's (7) *Interpersonal Judgment Scale*, while attitude dissimilarity yielded perceptions of both low self-concept support and low interpersonal attraction. Thus, *ad hoc* attraction dyads in the laboratory report a pattern of interaction perceptions which are similar to those found in friendships of short duration. However, friendship endurance appears to have been associated with a decreasing emphasis on attitude similarity and an increasing emphasis on self-concept support. Moreover, because actual similarity and self-concept similarity were absent in the present study, it is likely that phenomenological intrasimilarity between self-concept and perceived self-concept support is a more reliable parameter of "natural" friendship than is the dyadic intersimilarity of traits or attitudes.

The importance of self-concept support in friendship acquaintances has been noted by other writers who were concerned with the effects of social influences on an individual's self-concept (*cf.* 1, 16). These writers have concluded that others generally serve to verify one's own view of the world and to confirm hypotheses that one already holds about oneself. Individuals probably do like people whom they see as being different from themselves, as suggested by the present study and by others (e.g., 2, 4). Because of the dominant desirability to maintain cognitive consistency in perceptions that he holds about himself, perceived differences between the self and attractive others need not give rise to cognitive imbalance. That is, an individual may tend to seek out those whom he perceives as sharing his own self-view, thus providing him with consensual validation (7), as well as cognitive consistency, regardless of the extent of perceived trait similarity or dissimilarity between himself and his friends. In any case, the relationship between my-view-of-your-view-of-me and my-view-of-myself appears to be a compelling feature of natural interpersonal situations, and this relationship should probably be given greater emphasis in interpersonal relations research, such as in studies of interpersonal attraction.

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EFFECTIVENESS OF VARIOUS REACTIONS TO A HOSTILE ATTACK*

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SUMMARY

Ss viewed a videotape in which one person expressed inappropriate and angry criticism toward a second individual. The latter then replied in six different ways. Ss saw all replies and rated the replier after each. Ss were also asked to characterize the replier after each response. A replication employed different actors and a slightly modified content for each reply. Regardless of changes in actors, the specific content of each reply, or the dependent variable, the replier was seen in the most favorable light when he refuted the various criticisms made by the assailant in a calm, friendly, and courteous tone of voice. It was speculated that a speaker's rapport with an audience after being attacked may depend on (a) the degree to which he can successfully defend his own position, (b) the degree to which he treats his assailant in a courteous and friendly manner, and (c) the degree to which he tries to establish good relations with his assailant.

A. INTRODUCTION

Prior research in the area of interpersonal attraction has been concerned with variables that determine attraction among strangers. The results of this research suggest that a person who tries hard to be complimentary to others and to agree with them should be successful in gaining their friendship (1, 2). Within established, ongoing groups, other variables may come into play. Consider a young faculty member who finds himself being accosted in a faculty meeting by a colleague. The colleague becomes visibly upset and starts to berate the young faculty member in a hostile, angry, and demeaning fashion. The young faculty member will probably become somewhat upset himself, but if he loses his temper and reacts in a highly inappropriate manner (e.g., by punching the colleague) he may find that he has permanently lost esteem in the eyes of the others present at the

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meeting. In fact, all his prior diligence in trying to be likeable might well be diminished through one emotional reaction in a stressful situation. Individuals may only be confronted with such a situation on rare occasions, but how they publically handle themselves may well be a crucial determinant of their long-term success within ongoing groups.

In the present series of studies, subjects saw a videotape in which one person expressed hostile and inappropriate criticism against a second individual (the victim). The victim then replied to the assailant, and observers rated the extent to which they would like to have future association with the victim. The study reported in this paper was essentially exploratory in nature and was designed to examine the effectiveness of six different replies made by the victim.

One reply embodied a "show you're strong and can't be pushed around" approach. If the assailant behaves in a highly emotional and irrational manner, the victim may be seen as somewhat weak unless he stands up to the assailant and, so to speak, meets him toe to toe. A second reply reflected an approach frequently encouraged in T-groups where people are trained to respond to conflict, not by saying something that reflects an evaluation of a potential antagonist, but instead by reporting back to the other what they themselves are feeling and thinking. In a third reply the victim merely agreed with the assailant. If liking for someone is a function of the extent to which he treats *others* in a friendly and rewarding fashion (vicarious reinforcement), the agreement reply should result in a high degree of (observer) attraction for the replier.

In one of the remaining replies, the victim merely disagreed with the replier. In another the victim reiterated the comments made by the assailant. This was a type of "Rogerian" approach in which the victim reflected back to the assailant the content of the assailant's remarks without evaluating them pro or con. In a final reply, the victim engaged in a friendly but incisive refutation of the comments made by the assailant. If there is some reason to believe the charges leveled against the victim by the assailant, the victim may be seen as more attractive when the charges have been removed. An effective refutation would accomplish this objective.

In order to learn whether there might be an interaction between the effectiveness of the victim's reply and the conditions under which the attack took place, some of the observers were given information which suggested that there was absolutely no foundation to the assailant's remarks, while

others were given information which suggested that there might be some foundation to the assailant's charges.

B. METHOD

1. *Effectiveness of Manipulations*

A videotape was made in which a student made some hostile comments toward a professor, with the professor then responding to the student in various ways. (A more complete description of the contents of the tape is given in the next section.) It was hoped that observers would see the comments made by the student as an inappropriate hostile attack upon the professor. To learn whether this was in fact the case, an independent group of subjects ($n = 22$) was selected and shown the beginning portion of the tape up to the point where the student finished his criticism of the professor. Subjects were then asked whether or not they perceived the student's comments as a "hostile attack" and whether they felt that the student's behavior was appropriate or inappropriate.

2. *Attraction to Professor After Each Reply*

a. Procedure. The subjects, all college students, were seated in a large room facing a T.V. monitor which was attached to a videotape recorder. They were told that they were participating in a study concerned with the way students evaluate teachers and were informed that they would be seeing a videotape of a professor interacting with his class. At this point, they were given the results of a student evaluation survey. Twenty-three subjects were given information which indicated that the professor had good student ratings, and 22 subjects were given information which indicated that the professor had low student ratings.

The videotape recorder was then turned on. The tape started with the professor asking the class for some comments about the course and the way he had taught it. At this point one of the students (an experimental affiliate) launched into an angry and hostile denunciation of the professor. He began by saying, "Man this course really sucks," continued with hostile comments concerning the clarity of presentation, meaningfulness of subject matter, and poor quality of examinations, and ended by accusing the professor of being, in essence, an S.O.B. The videotape was then stopped and the subjects were informed that they would be viewing six replies that the professor could make to the student. The subjects next viewed the videotape showing

all the six replies. All six replies were then reshown and at the end of each reply subjects were asked to answer the following question:

"To what extent would you like to be in a class with this teacher?" The rating was made on a scale ranging from 1 ("strong desire not to be in professor's class") to 7 ("strong desire to be in professor's class").

b. Teacher's replies to student attack. A description of the six replies and the label assigned to each is presented below.

- (1). *Reiteration.* The teacher summarized the points made by the student in a nonemotional tone of voice and said that he would take them into consideration.
- (2). *Disagree.* The teacher summarized the points made by the student and in a nonemotional tone of voice simply stated that he disagreed, in turn, with each.
- (3). *Refutation.* This condition was similar to the disagreement condition except that here the teacher stated reasons why he disagreed with the student. For example, with regard to the point made about poor examinations, the teacher replied that the class average on these tests tended to be high; concerning the point made about being unfriendly, the professor replied that he had warm feelings toward many in the class and counted several as close friends.
- (4). *Agree.* The professor summarized each of the points made by the student and in a submissive, good-natured manner, taking each point up in turn, stated that he agreed and thought they were well justified.
- (5). *Lamentation.* The teacher recoiled as if in shock and then in a mournful and dejected manner stated that he was quite hurt and thought that the student was his friend and liked him. The scene ended with the professor being almost in tears.
- (6). *Hostile counterattack.* The professor responded on the same emotional level as the student. In an angry and hostile tone of voice, the teacher derogated the student for his presumptuousness and ended by ordering the student to get out of his class unless he could control himself.

3. *Attraction to Teacher (Replication)*

To examine the generality of the results obtained with the previous sample, the study was replicated under slightly different conditions. A new actor was recruited to play the role of the attacking student and a new actor was recruited to play the role of the professor. The nature of the student's criticism was also modified. In the replication, the student com-

plained that the content of the course was completely irrelevant, that the tests were unrelated to the material covered either in class or in the textbook, that the grading of the tests was completely subjective, and that the professor was "not a nice person." As in the original study, the student shouted these comments at the teacher in a very angry tone of voice. With two exceptions, the procedure was identical to that previously employed. One discrepancy was that subjects were not given any information about how previous students had evaluated the professor (i.e., good teacher *vs.* bad teacher). The other modification was that the teacher's replies were presented in a different order. The subjects were 27 students enrolled in a third year psychology course.

4. *Perception of Teacher After Each Reply*

In order to determine how the professor might have been perceived after making each of the six replies, a new group of subjects was recruited ($n = 34$) and shown the same videotape sequence. The procedure was identical to that previously employed with one exception. Instead of rating their liking for the professor, subjects were asked to answer seven yes-no type questions after seeing each reply. The questions were as follows:

1. Do you think that the professor is being hostile toward the student?
2. Do you think that the professor is acting in somewhat of a friendly manner toward the student?
3. Do you think that the teacher is attempting to resolve the conflict with the student?
4. Do you think that the professor is being somewhat unprofessional and undignified?
5. Do you think that the professor is being somewhat weak and/or submissive?
6. Do you think that the professor is being somewhat curt with the student?
7. Do you think that the professor is giving serious consideration to what the student has said?

C. RESULTS

1. *Effectiveness of Manipulations*

Subjects were asked whether or not they felt that the student's criticism of the professor was a "hostile attack" and whether they felt that the student's behavior was appropriate or inappropriate. Seventy-three percent of

the respondents classified the criticism as a hostile attack and 73% replied that they felt that the student's behavior was inappropriate. The results suggest that the student's criticism can be labelled as an inappropriate hostile attack on the professor.

2. *Attraction to Teacher After Each Reply*

Subjects were asked to indicate, after seeing each reply, the extent to which they would like to take a future class from someone who would make such a reply. Approximately one-half of the subjects were told that the professor had good student ratings, while the others were told that he had poor ratings. The means on the dimension, desire to take a future class with the professor, are presented in Table 1. A 2 by 6 repeated measures analysis of variance was employed to analyze these data. There was a significant main effect of the six replies ($F = 25.62$; $df = 5/215$; $p < .001$). The information about how previous students evaluated the professor, good teacher *vs.* bad teacher, was not a significant variable ($F = 3.18$; $df = 1/43$; $p > .05$), and the interaction was also nonsignificant ($F < 1$). With regard to the overall effect of the six replies, refutation received the most favorable evaluation, attack the least favorable evaluation, and the remaining four replies were intermediate. Duncan's multiple range test was employed to examine differences between individual replies, and the results are presented in Table 1.

3. *Attraction to Teacher (Replication)*

An independent sample of subjects was employed in order to learn whether the results previously obtained could be replicated under slightly different conditions (different actors, order of replies, and content of assailant's remarks). The means on the dimension "desire to take future class with

TABLE 1
MEAN RATINGS FOR DESIRE TO TAKE FUTURE CLASS WITH PROFESSOR UNDER EACH OF SIX REPLY CONDITIONS

Information about teacher	Reply					
	Refute	Reiterate	Disagree	Lamentation	Agree	Attack
Favorable	5.09	2.91	2.78	3.17	2.22	1.83
Unfavorable	5.46	3.96	3.36	4.05	2.32	1.64
Combined \bar{X}	5.27 _a	3.42 _b	3.07 _b	3.60 _b	2.27 _c	1.73 _c
Replication	5.22 _a	3.52 _b	3.52 _b	2.70 _c	2.63 _c	1.67 _d

Note: Treatments with the same letter subscript are not significantly different from one another.

teacher" are presented in Table 1.) A repeated measures analysis of variance was carried out on the data. There was a significant main effect of the six replies ($F = 22.45$; $df = 5/130$; $p < .001$). As in the original study, refutation received an extremely high rating, the hostile counterattack received an extremely low rating, and the remaining four replies were intermediate.

4. *Perception of Teacher After Each Reply*

After seeing each reply, subjects were asked whether or not they felt the professor was (a) being hostile, (b) being friendly, (c) attempting to resolve the conflict, (d) being unprofessional and undignified, (e) being weak and/or submissive, (f) being curt, and (g) giving serious consideration to the student. The results seem to parallel those presented in Table 1. On each of the seven dimensions, a majority of the subjects gave refutation a favorable rating. A majority of the subjects gave the counterattack reply an unfavorable rating on all but one dimension. The only thing positive about the hostile counterattack reply was that the professor was not seen as weak and submissive. The perception of the professor determined by the remaining replies was mixed with both desirable and undesirable traits being ascribed to him. The undesirable elements of the remaining four replies were as follows. For the disagreement reply, a majority did not feel that the professor was trying to resolve the conflict nor did they feel that the professor was giving serious consideration to the student. For the reiteration reply, a majority (a) did not feel that the professor was trying to resolve the conflict, (b) felt that the professor was weak and submissive, and (c) felt that the student was not being given serious consideration by the professor. For both agreement and lamentation, the majority (a) felt that the professor was not attempting to resolve the conflict, (b) was unprofessional and undignified, and (c) was weak and submissive.

D. DISCUSSION

Observers showed the strongest desire to want to take a future class with the professor when the professor replied to the hostile student with a friendly refutation. Similar results were obtained in the replication with a different sample of observers, different actors, slightly different wording of replies, and a different order of replies. Another independent sample of observers gave refutation a positive rating on a variety of evaluative dimensions with refutation being the only reply to come out positive on *all* dimensions. It is thus possible to conclude that a friendly refutation did seem to be a fairly

effective way of responding to hostility at least in terms of generating rapport with the audience. In refutation, the teacher defended his own position and was seen as (a) treating his assailant in a courteous and friendly manner, and (b) as trying to establish good relations with his assailant. The fact that the current refutation contained these elements may, in part, have been responsible for its success.

Although refutation proved to be the superior reply, the experiment was not designed to answer why. Refutation seemed to differ from the other five replies on a variety of dimensions, and any one of these could be the crucial dimension. One difference between refutation and the other replies was that refutation was the only reply (according to the observers) in which the teacher was seen as attempting to resolve the conflict with the student. Students may feel that this is a desirable trait for teachers to have and may have increased their attraction to the professor when he demonstrated that he did have it. Another difference between refutation and the other replies was that refutation was the only reply in which the teacher demonstrated his ability to argue logically and forcefully. These also may be esteemed traits within the academic community, and the attribution of these traits to the professor may be the reason why refutation received a high rating. Another difference between refutation and the other replies was that refutation was the only reply in which the professor defended himself against the slanderous charges brought against him. People may be more attracted to those who (successfully?) defend themselves against slander than those who do not bother to defend themselves. Still another difference between refutation and the other replies was that refutation was the only reply in which the professor responded to the conflict as if it were a friendly discussion. The ability to do so may be perceived as an esteemed trait.

One question can be raised about the possible generality of the results. Under what conditions would refutation continue to be the superior reply? In sample 2, refutation proved to be the superior reply, but the replies were presented in constant order which means that the effectiveness of refutation is confounded with order of presentation. In sample 3 (Replication), however, the replies were presented in a different order and the results were essentially the same. The superiority of refutation thus seems to hold regardless of the order of presentation of the replies.

Does the superiority of refutation hold regardless of whether the attack is perceived as justified or unjustified? This question is harder to answer.

In the original study (sample 2), half of the observers were told that the teacher had good student teacher ratings, while the remaining observers were told that his teacher ratings were poor. Refutation proved to be the superior reply under both conditions. Unfortunately, the authors neglected to ascertain whether observers assimilated this information (good teacher *vs.* bad teacher). No conclusion is thus possible about whether refutation will prove to be effective under both conditions.

The present study involved college students observing a student-teacher conflict and a final question involving generality concerns whether refutation would prove to be the superior reply with a different type of conflict (e.g., a husband-wife conflict) or with a different population of observers. No assumption is made that any such generalization is possible.

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THE EFFECT OF ATTRIBUTING INTERNAL AROUSAL TO AN EXTERNAL SOURCE UPON TEST ANXIETY AND PERFORMANCE*¹

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SUMMARY

Schachter's (13) theory of emotions as cognitive "labels" attached to undifferentiated states of internal arousal was applied to findings of Sarason (10) and his colleagues concerning the performance effects of test anxiety. The results supported Sarason's data in indicating that, under ordinary circumstances, the high-anxious individual performs less well than the low on a difficult and threatening task. It was further predicted and discovered that the highly test anxious person who was led to ascribe his internal arousal to the side effects of a placebo performed as well as less anxious subjects and better than other highly test anxious people who were unable to attribute their anxiety symptoms to placebo side effects.

A. INTRODUCTION

In a competitive, achievement-oriented culture, such as the one in which we live, it is not surprising that a large amount of anxiety becomes attached to a threatening test situation. The usefulness of tests as evaluative and diagnostic instruments becomes questionable if it can be shown that a construct other than that which the test is supposedly measuring affects performance. For example, it has been found that subjects high in test anxiety took significantly longer than low test anxious subjects to complete a motor test of intelligence given under threatening conditions (4). Furthermore, Sarason (8) found significant negative correlations with test anxiety for scores on college entrance exams and four-year grade point averages.

The test anxiety construct has been shown to consist of two independent

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responses: debilitating task-irrelevant responses and facilitating task-relevant ones (1, 5, 9, 15). When a high degree of threat was presented to subjects who were already high test anxious, the debilitating responses predominated, whereas under low threat conditions, facilitating responses led to improved performance (4, 10, 11). The logical inference to be made from these studies is that students who have associated strong anxiety responses with a test situation will be at a disadvantage compared to low test anxious students under stressful conditions.

A growing line of research in the area of cognitive relabeling led the authors to the expectation that if the internal arousal which occurs during a state of anxiety could be attributed to an event other than the threatening test, normally test anxious students would not suffer their customary performance loss. Schachter and Singer (13) have demonstrated that a subject in a state of epinephrine arousal can be induced to exhibit anger or euphoria depending on the behavior of others around him: i.e., depending on the cognitive label he is given for his symptoms. Naturally occurring states of arousal have also been manipulated. Subjects in an experiment conducted by Nisbett and Schachter (6) took a greater number of shocks before reaching a pain tolerance threshold if they attributed their internal arousal to placebo "side effects" rather than to the painful stimuli. Similarly, Ross, Rodin, and Zimbardo (7) and Weiner (14) have demonstrated that fear of pending electric shocks could be reduced if subjects were led to relabel their internal arousal. Schachter and Ono [cited in Schachter and Latane (12)], Diensbier and Munter (3), and Diensbier (2) have all shown that subjects were more likely to cheat when they had an alternative cognitive label for the symptoms which resulted from fear of being caught.

The present experiment investigated the possibility that test anxiety might also be subject to such influence. If a rather anxious individual, placed in a threatening test environment, could be made to attribute the bodily symptoms of anxiety to an event other than the test, a significant portion of this arousal could not be labeled "anxiety." Since testing situations would have in the past been strongly associated with anxiety, however, task-relevant anxiety responses would be expected to remain, facilitating performance on a difficult task, such as Sarason's (10) anagrams. The same subject not provided with an alternate explanation for his symptoms would seem more likely to label all of his anxiety as being due to the test and would thus display the usual performance decrement.

The experimental predictions were as follows:

1. Among high test anxious subjects, those who attribute internal arousal to a placebo will be less anxious and thus able to perform better than those who attribute their symptoms to the threatening test.

2. Low test anxious subjects should have their performance little, if at all, facilitated by the attribution of their arousal to a placebo owing to the possibility that their level of internal arousal might not be sufficiently great for noticeable relabeling to occur and the fact that a moderate degree of task-relevant anxiety is itself necessary for optimal test performance.

B. METHOD

1. *Subjects*

The subjects were 33 male and 45 female undergraduates fulfilling a course requirement for introductory psychology at the State University of New York at Stony Brook. Subjects were not aware in advance that the experiment involved the taking of "drugs" in capsules.

2. *Procedure*

Subjects arrived in groups of nine (sometimes fewer because of no-shows) at a seminar room in the Social Psychology laboratory. Upon entering, each subject was randomly assigned to one of three conditions: "White Pill" [pill-attribution (P-A)], "Pink Pill" [pill/no attribution (P-NA)], and a no-pill Control. He or she was seated in the appropriate section of the room and provided with a test booklet, an IBM score sheet, and a pencil; the P-A and P-NA groups had the appropriate gelatin capsule (placebo) and a cup of water placed before them. Two experimenters were present at all times "to be sure we can give you all necessary individual attention and reassurance."

After requesting that the personal information asked for on the cover of the test booklet and on the score sheet be filled out, and instructing the subjects not to talk to one another, one of the experimenters read a paragraph adapted from Sarason (10, p. 166):

Ability to perform satisfactorily on the tests which follow has been found to be directly related to intelligence level. High school students of above average intelligence (*IQ* greater than 100) and most college students should be able successfully to complete these tasks.

The subjects were then given four minutes to complete the 19 true-false

items on the Test Attitude Scale which, in fact, comprised the Alpert-Haber Test Anxiety Scale (1).

a. *Attribution manipulation.* The experimenter proceeded to explain that the tests which were to be given, while important in themselves as highly reliable measures of intelligence, creativity, and "your aptitude in psychology," were to be given "under somewhat different circumstances than any you have taken before." Past research at Stanford and Harvard concerning "chemical stimulants" used to increase one's attention span and improve test performance was described at length. The experimenter then instructed the two pill groups to swallow their capsules and recounted the possible "side effects" of the two stimulants, "Settelinin" and "Monoprocyamate," being used in the present experiment:

... Compound "S," given to this group in the white capsules, may induce minor but noticeable increases in the strength of your heartbeat, a small amount of moistness of the palms of your hands, and a very slight feeling of queasiness in the stomach: symptoms similar to those you might experience in a state of very mild anxiety. Compound "M," given to this group in the pink capsules, may produce a slight decrease in respiration rate, a perceptible relaxation of muscle tension, and a small decrease in body temperature: symptoms characteristic of a state of relative calm. The rather opposite nature of the side effects of the two stimulants is somewhat paradoxical, since they operate almost identically in widening attention span.

b. *The creation of a stressful situation.* Ambiguous instructions were now delivered: e.g., "A correct and imaginative set of answers is rated generally more highly than a larger set containing a greater percentage of errors, though the number of items you are able to complete is also very important." Then, the subjects were informed that their answer sheets would be machine-scored immediately after the conclusion of the tests and that:

... we will discuss as a group your test performance. You will be asked to explain any errors of rational judgment that you committed on the test. If your score is below a certain minimal level expected of beginning psychology students and if you are unable to explain satisfactorily your errors of judgment, you will be asked to return for further individual testing.

It was claimed that the attention-expanding stimulants increased one's score by about 15% and that the scores of the Controls would be multiplied by a correction factor to compensate for their disadvantage.

The subjects next filled out a "Test Environment Questionnaire," the first half of which simply checked to see that all remembered whether or not they had swallowed a capsule and, if they had, whether they could recall its color and, on a checklist, the possible side effects they "were told

it would have." Any errors made by the subject were corrected for him by the experimenters, who surveyed each subject's responses while the questionnaires were being filled out. Only three or four subjects required this assistance.

The second half of the questionnaire consisted of the following items:

(a) Your physical and emotional state has been shown to influence your performance on these tests and the effect which chemical stimulants may have on that performance. *Regardless of whether you took a pill or not*, could you give us some idea of your present state of being, based on the following scale? 0 (Not at all) 3 (Slightly) 6 (Fairly much) 9 (Extremely much).

(b) People differ in the degree to which they feel alert and awake at any given moment. This, of course, affects their span of attention. How alert do you feel right now?

(c) People in a testing situation such as this one also differ in the degree to which they feel "on edge"—that is, feel mildly anxious—how "on edge" do you feel right now?

(d) As you probably already know, your mood can affect your performance on a test appreciably. To what degree do you feel comfortable, happy, and in a generally good mood?

When the subjects had finished, the experimenter read the instructions for the "Anagrams Task," which employed the same 13 anagrams used by Sarason (10):

When you are told to turn to the next page, you will see a series of disarranged words. Your job will be to rearrange each group of letters so that they make a meaningful English word. . . . For example, if the disarranged word were TASK, you might see the following item on your test sheet: Example—SKTA: What is the second letter of the rearranged word? (a) S (b) K (c) T (d) A

An "Inferential Reasoning" test which took eight minutes and a "Gestalt Transformation Test" for which 10 minutes were allotted were administered following the "Anagrams Task." Since important information was still to be obtained following the testing part of the experiment, these additional tasks were included as filler items to add to the credibility of the cover story.

At the conclusion of the testing, all subjects completed a "Post-Test State of Being" questionnaire. Item one on the questionnaire consisted of a symptom checklist containing the three "White Pill" and three "Pink Pill" side effects intermingled, with "relative calm" and "mild anxiety" also included.

It was hoped that all subjects, including the Controls, would have experienced basically the same symptoms and that the expected differences between conditions would be primarily on the basis of *attribution* of symptoms. The other two items on the questionnaire used the same rating scale as those on the "Test Environment Questionnaire" and are reproduced below:

2. To the extent that you noticed *any* of the above symptoms . . .

(a) If you took a capsule to what extent do you attribute your symptoms to the capsule?

(b) *Regardless of whether you took a capsule or not*, to what extent do you attribute these symptoms to your own personal reaction to this testing situation?

3. How confident are you that you performed satisfactorily on these tests?

Finally, all subjects were given a complete debriefing and sworn to secrecy. Several subjects were debriefed individually in order to probe for suspiciousness about the tests and pills and for possible previous knowledge about the experiment.

C. RESULTS

The 78 subjects were split at the overall median score on the Alpert-Haber scale to form high (Hi T-Anx) and low (Lo T-Anx) test anxious groups within each of the three experimental conditions. The median for males equaled the median for females (between 9 and 10 on the scale), so the T-Anx split was made without regard to sex.

The data for the Hi and Lo T-Anx groups in each of the experimental cells were virtually without exception in the direction predicted by the experimental hypothesis. However, the effects obtained failed to reach acceptable levels of statistical significance. Consequently, the subjects were resplit on the basis of more stringent criteria. This time, the upper (scores of 12 or above) and lower (7 or below) *thirds* of the T-Anx distribution were to be compared with each other. The statistical analyses reported below were performed on the data obtained from the *restricted* split of subjects into Hi and Lo T-Anx groups, and so results of 26 of the original 78 subjects were excluded. However, the cell means which were obtained from the original median split are also shown in Table 1. Analysis of these latter Alpert-Haber scores revealed that, over all conditions, Hi T-Anx subjects had greater test anxiety than Lo T-Anx subjects ($F = 312.88, 1/46$

TABLE 1
MEAN RATINGS OF ANXIETY, ATTRIBUTION OF SYMPTOMS TO ONESELF, AND NUMBER OF ANAGRAMS SOLVED

Condition	High test anxious group			Low test anxious group		
	Median split Mean	n	Restricted split Mean	Median split Mean	n	Restricted split Mean
<i>Mean rating of anxiety</i>						
Pill-attribution (P-A)	3.00	12	2.43	2.79	14	2.44
Pill/no attribution (P-NA)	4.24	17	4.43	3.00	9	2.57
Control	5.46	13	5.17	4.46	13	4.80
<i>Mean attribution of symptoms to oneself</i>						
P-A	4.50	12	3.71	4.75	14	4.00
P-NA	5.41	17	5.85	5.67	9	6.00
Control	6.38	13	6.17	6.77	13	6.70
<i>Mean number of anagrams solved</i>						
P-A	5.58	12	6.43	6.00	14	6.33
P-NA	4.00	17	3.57	6.44	9	7.00
Control	4.46	13	4.58	4.61	13	5.00

df , $p < .001$). There were no differences in test anxiety between experimental conditions ($F < 1$).

The means for the subjects' rated anxiety following the introduction of threat are shown in Table 1. A main effect for attribution ($F = 5.04$, $2/46$ df , $p < .05$) indicated that the subjects in the P-A groups were least anxious, as expected. The same main effect ($F = 4.91$, $2/46$ df , $p < .05$) in the data for self-attribution of symptoms, also shown in Table 1, revealed that the P-A subjects attributed their internal arousal somewhat less to their "own personal reaction to the testing situation" than did the P-NA and Control people. That is, the P-A subjects attributed fewer anxiety symptoms to themselves than did the P-NAs and Controls, who had not been given the opportunity to ascribe their arousal to anything other than test anxiety.

The results for the Anagrams Task provided some further support for the experimental hypotheses. As predicted by hypothesis 1, the attribution effect was stronger for the Hi T-Anx subjects than for the Lo. An analysis of variance comparing P-A and P-NA subjects in Table 1 revealed a near-significant condition \times T-Anx interaction ($F = 3.51$, $1/26$ df , $p < .08$), indicating that while Hi T-Anx P-A subjects had their performance facilitated relative to their P-NA counterparts, the Lo T-Anx groups were not different from each other ($t < 1$). The Hi T-Anx P-NA group solved only 3.57 anagrams, while the combined Hi and Lo T-Anx P-NA solved an average of 6.59 ($t = 2.42$, $p < .02$). The Hi T-Anx P-A subjects showed no performance loss relative to the Lo, but a separate analysis of the P-NA and Control means replicated Sarason's (10) results in revealing the debilitating influence of high test anxiety on anagram solution ($F = 4.27$, $1/32$ df , $p < .05$).

D. DISCUSSION

May it be concluded that an anxious individual can be convinced that an external agent is responsible for some share of his internal arousal, that he will then perceive himself to be less anxious, and hence be capable of better performance than if he had not received the placebo? Perhaps, but with some reservations.

The main effect for attribution in Table 1 implies, in addition to its previous interpretation, that the P-NA subjects were, unexpectedly, less anxious than the Controls. A separate *anova* was computed for P-NA *vs.* Control which substantiated this inference ($F = 3.13$, $1/32$ df , $p < .10$). A chi

square analysis of the symptom checklist results showed fewer subjects in the P-NA group to have experienced symptoms of the "white pill" ($\chi^2 = 12.85$, 1 *df*, $p < .001$) or "mild anxiety" ($\chi^2 = 5.83$, 1 *df*, $p < .02$) as compared to those in the Control condition.

Since the Controls were designed to be the no-pill equivalent to the P-NA group, their high anxiety relative to the latter was probably due to the experimenter's emphasis on the "attention expanding" effects of the "drugs" given to the two pill groups. The Controls may have felt that they were being deprived of something which might aid them on the tests. They may have begun to fear that they would most likely be the ones to suffer the punishment in store for those who performed poorly. The Controls indeed rated themselves to be in a rather bad mood relative to the subjects in the P-A and P-NA groups ($t = 1.84$, $p < .10$ and $t = 2.26$, $p < .05$, respectively). Since the P-A and P-NA groups differed in rated anxiety but not at all in good humor, the "bad mood" of the Controls seems to have resulted from the lack of a pill, and their surprisingly high anxiety probably stems from this same cause.

More important problems for these data are posed by the necessity for discarding one-third of the original subjects and the marginal significance associated with the primary dependent measure, the number of anagrams solved. Since test anxiety was from the start not a manipulated variable but rather a construct to be examined internally, the exclusion of the "moderate" third of the T-Anx distribution would seem to be a justifiable procedure. It is evident in Table 1 that the results derived from a median T-Anx split were in the same direction as the data derived from the restricted split into upper and lower thirds.

Less defensible is the marginal interaction ($p < .08$) in the comparison of anagram performance for the two pill groups. The anagram data did parallel the results presented in Table 1, however, in that the P-NA and Control people, who were most anxious and who attributed most of their anxious feelings to themselves, answered the fewest anagrams. Further, the Hi T-Anx P-NA subjects answered the fewest anagrams of any group in the two pill conditions. This latter result was clearly predicted by the experimental hypotheses, as was the failure of high test anxiety to debilitate the performance of P-A subjects while significantly reducing the number of solutions discovered by their P-NA and Control counterparts. The experimental predictions were supported somewhat, but not strongly, by the anagram data.

Data concerning the degree to which subjects felt alert, happy, and confident were peripheral to the hypotheses but nonetheless intriguing. A main effect for test anxiety ($F = 18.11$, $1/150$ df , $p < .01$) indicated that Hi T-Anx subjects were generally less alert, less happy, and less confident than Lo T-Anx ones, findings which may shed some light on the reasons for their usual test performance decrement. This finding is consistent with Wine's (15) review which indicated that highly test anxious subjects describe themselves in more negative terms than do low test anxious subjects.

In conclusion, it has been demonstrated that a normally highly test anxious subject may have his tension reduced during an examination if he is provided with an external agent to which he can attribute the symptoms he had in the past associated with a state of "anxiety." The effectiveness of this reduction in tension can be observed directly, in terms of performance on a task which is ordinarily quite difficult for the highly anxious individual to complete: Normally high-anxious subjects who have swallowed a capsule which they believe to have produced the anxiety symptoms which they have in the past felt and are now feeling tend to attribute their symptoms to the pill rather than to themselves. They therefore are able to perform better on an ego threatening task than either high-anxious Controls or other high-anxious subjects not able to attribute their symptoms to the capsule they swallowed.

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HANDWRITING AND SELF-PRESENTATION*

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SUMMARY

Relations were examined between students' self-conceptions and handwriting-based inferences about academically relevant traits made by members of the academic population to whom the writers were unknown. There was good interjudge agreement for some traits. Agreement between handwriting judgments and writer self-ratings was significantly reduced when judgments were based on best rather than normal handwriting, suggesting suppression of self-revelation. When asked to do so, students successfully conveyed "false" impressions of named traits via handwriting. Handwriting can be regarded as a social act; Ss showed knowledge of how it can be modified by situational demands to effect differing kinds and degrees of self-presentation.

A. INTRODUCTION

The question whether people reveal character in handwriting is intriguing. One problem is that revealed character varies with social situation and with rules used by actor and interpreter, leaving open the question of whether character has a central, stable component or not. Most reported work shows some, albeit low, reliability and validity in personality assessments made from handwriting, especially when assessment is done by expert graphologists [Allport and Vernon (1), Galbraith and Wilson (3), Lemke and Kirchner (6)]. Such studies used psychometric and other "objective" measures against which handwriting-based personality assessments are validated. This approach sidesteps the questions of whether or not people are aware of what they reveal in their handwriting and whether or not this can be deliberately altered. We can regard handwriting like any other social action as a vehicle for self-presentation, the extent and nature of which can be modified in the light of anticipated or hoped-for consequences [e.g., Goffman (4), Harre and Secord (5)]. Accordingly, students' self-ratings on five ordinary-language characteristics were correlated with judgments based on handwriting samples produced

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in different conditions under which it was thought self-presentation might vary. Four types of self-rating were obtained—usual self, ideal self, private social self, and public social self—although, to anticipate, it was found that no one of these related more to handwriting-based judgments than any other.

B. EXPERIMENT 1

This experiment examined whether students reliably communicate their self-conceptions to others via handwriting, and whether this communication is more or less good via "best" than normal handwriting. Eleven undergraduates (five men and six women from Bedford College, London University) copied the same sentence, using their preferred writing implement, onto an unruled 10×15 cm card, once using "normal, hasty writing" and once using "best writing, as if applying for a job." They then rated themselves on a nine-point scale four times (myself as I usually am, myself as I would like to be, myself as others see me, myself as the world in general sees me) on each of five characteristics which it was felt are commonly believed in the academic subculture to be related to academic performance: clear-thinking, hardworking, methodical, nervous, original. The two sets of handwriting samples were each ranked on these five characteristics by five judges untrained in graphology: four women, one man (three staff and two undergraduates) from Bedford College. Coefficients of concordance (Kendall's W) were significant ($p < .001$) for the traits clear-thinking, methodical, and original; significance was not quite attained for hard-working and nervous. Correlations between pooled handwriting judgments and Ss self-ratings are shown in Table 1.

TABLE 1
CORRELATION COEFFICIENTS (SPEARMAN'S r_s) BETWEEN SUBJECTS' SELF-APPRAISALS AND JUDGMENTS FROM NORMAL AND BEST HANDWRITING ($N = 11$)

Trait	Self-appraisal	Self	Ideal-self	Private social	Public social
Clear-thinking	Normal	-.52	-.16	-.33	-.79**
	Best	-.56*	-.23	-.47	-.86**
Hard-working	Normal	+.44	-.28	+.45	+.42
	Best	+.03	-.06	+.04	+.01
Methodical	Normal	+.36	+.17	+.33	+.65*
	Best	-.09	-.17	-.16	+.07
Nervous	Normal	-.38	-.26	+.20	-.20
	Best	-.63*	-.40	+.12	-.21
Original	Normal	+.83**	+.48	+.66*	+.50
	Best	+.78**	+.40	+.39	+.19

* $p < .05$.

** $p < .01$.

Although Ss were not very successful in communicating any of the self-conceptions examined here via their normal writing, they were invariably more successful at this with normal than with best handwriting. Each correlation between handwriting-based judgment and self-rating was lower for best writing than for normal writing. This 20:0 split is significant well beyond the $p < .001$ level on the sign test. When Ss produced their best handwriting they appeared to be inhibiting self-revelation.

C. EXPERIMENT 2

Is it possible to convey deliberately impressions of personality via handwriting? The 11 Ss of Experiment 1 each copied the same sentence four times, trying to convey in turn the impression of people who were methodical, not methodical, original, and unoriginal. Six simulated-methodical and five simulated-not-methodical samples were mixed for ranking, and the remaining simulated samples mixed in the same way. Five judges (not previously used, three women and two men, three staff and two students) ranked six sets of samples, three (two simulated, one normal) for methodicalness, and three for originality. Related t tests on pooled ranks for normal and simulated handwriting showed significant differences in the expected direction in all cases. With 10 df , one-tailed tests, and a mean rank for normal writing of 6.0 in all cases the t values were as follows: simulated methodical (mean rank 4.53) *vs.* normal, $t = 4.66$, $p < .001$; simulated not methodical (mean rank 7.47) *vs.* normal, $t = 2.35$, $p < .025$; simulated original (mean rank 5.02) *vs.* normal, $t = 2.43$, $p < .025$; simulated unoriginal (mean rank 6.98) *vs.* normal, $t = 2.22$, $p < .025$. Subjects were thus successful in conveying to the judges, who were of course unaware of the purpose of the experiment and the conditions under which the samples had been produced, impressions of methodicalness, originality, and their lack.

D. CONCLUSIONS

For the population and some traits tested there was concordance over the characters ascribed to writers. These ascribed characters did not agree very well with the writers' self-conceptions. Such agreement as there was, was significantly reduced for best as compared with normal handwriting. One might have expected perhaps that agreement between handwriting judgments and the writers' ideal self-conceptions would have been increased if it were the case that Ss were trying to create a good impression with their best handwriting. Basso (2) has suggested that lack of self-revelation might be universal response to unpredictability and uncertainty in social relationships.

This seems to have been the case here when students were asked to write "as if applying for a job or a postgraduate place." "False-self-presentation" seems not to have occurred, perhaps because the exact type of self-presentation demanded by the situation was unclear, perhaps because Ss were not Machiavellian. Experiment 2 indicated that Ss knew very well how to alter their handwriting to present effectively a specific trait when this was asked for. Handwriting can usefully be regarded, not merely as a willy-nilly expression of personality, but as a social act, whose meaning is fairly reliably interpreted by others and whose form can be varied according to situational demands.

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A BEHAVIORAL TEST OF THREE F SUBSCALES*

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SUMMARY

Adorno *et al.*'s F Scale is a widely used test in psychological research. To date, most if not all of the validity experiments on the F Scale have been based on attitudes and not behavior. The present experiment was designed to test three of the nine F subscales on the basis of a behavioral criterion. The experiment was carried out in Tel-Aviv, Israel. The results indicate that three F subscales may not be measuring the authoritarian-submissive trait.

A. INTRODUCTION

Adorno *et al.*'s (1) F Scale of authoritarianism has generated a large number of studies and reports in the United States and abroad (4, 6). Although Peabody (11) expressed reservations concerning the use of the F Scale in other languages, it has been translated on several occasions. Meade and Whitaker (8) found significant variations in college students' scores on the F Scale across six cultures, while Minkowich and Shaked (10) discovered significant differences in the authoritarian attitude in various subcultures of Israel.

Most if not all of the validity experiments of the F Scale were based on attitudes and not behavior. Cohn (5) found a significant correlation between the F Scale and a positive response to the MMPI items. Campbell and McCandless (3) discovered that the F Scale correlated positively with xenophobia, while Sullivan and Adelson (14) found a significant relationship between the F Scale and misanthropy. Other research projects have shown the F Scale to be significantly correlated with dogmatism (13), Arab nationalism (12), and the degree of outgroup aggression in dreams (9).

The F Scale consists of nine subscales. The present experiment focused on three of the subscales in Forms 45 and 40 which are defined by Adorno as follows: (a) Conventionalism—rigid adherence to conventional middle

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class values; (b) Authoritarian Submission—submissive uncritical attitude toward idealized moral authorities of the ingroup; (c) Superstition and Stereotype—the belief in mystical determinants of the individual fate, the disposition to think in rigid categories. The three subscales are believed to measure the extent to which individuals are willing to accept authority without question, to obey instructions, and to think in rigid terms.

It is the objective of the present research to design a behavioral test of the three subscales. The experiment was divided into two phases. In the first phase a sample of students from Tel-Aviv University were sent a letter which asked them to come to a particular location to fill out a questionnaire. In the second phase those who did not respond to the letter were located and were given the same questionnaire.

It was felt that an official letter from the university would be perceived as an authoritative act to a student. As a result it was hypothesized that those individuals who responded to the letter demonstrated more of the submissive trait in terms of a higher score on the three F subscales than those individuals who did not respond to the letter.

The above hypothesis may be invalid in spite of the careful planning of the experiment because the subjects who responded to the letter may simply have been more willing to cooperate than those who did not respond to the letter. Therefore, the subjects in both phases were also administered Berkowitz and Lutterman's (2) Social Responsibility Scale. This scale is reported to measure the individual's traditional social responsibility attitude: i.e., the willingness of an individual to help others even when there is nothing to be gained for himself. The second, or alternative research hypothesis, was that the subjects who came as a result of the letter to take the questionnaire scored higher on the Social Responsibility Scale than did those subjects who took the questionnaire during the second phase of the experiment.

B. METHOD

The data were collected in April, 1973, in Tel-Aviv Israel. The subjects were drawn in a systematic manner from the student population of Tel-Aviv University in order to represent a cross-section. The sample of 440 students was selected so that half of the students were male and half female. In addition, an equal number of first, second, third year, and graduate students were selected for the research. (In Israel a B.S. or B.A. takes three years rather than four years as in the United States.)

Each student received a letter on Tel-Aviv stationary. The letter "re-

quested" the student to appear at a particular location at one of three specified hours to fill out a questionnaire. In Hebrew the word "requested" has a stronger meaning than in English and has a definite connotation that the individual is expected to do what is asked. The letter was signed by a fictitious professor; no department affiliation was given for the professor.

The letter resulted in a large number of calls to the university switchboard inquiring about the nature of the questionnaire. The operators were asked to say that they did not know anything about the study and that the student should do whatever he or she felt was best.

A teaching assistant administered the questionnaire to the 120 students who came as a result of the letter. He was instructed to indicate that he was paid by the professor who signed the letter and that he knew nothing of the questionnaire's objectives. Many of the students who took the test expressed annoyance for being disturbed. Several written and oral complaints were made to the university administrators. Only one student refused to take the test.

The researchers were able to locate 125 of the 320 subjects who did not respond to the original letter. Of those, 15 gave legitimate reasons which did not permit them to take the questionnaire when originally requested and therefore were excluded from the study.

The F Scale and the Social Responsibility Scale were translated in the following manner. First, an Israeli fluent in English translated the questionnaire into Hebrew. Then, an American fluent in both languages translated the questionnaire back into English. Finally, a third person resolved any differences that existed between the two translations (7). The scales were scored in a Likert manner.

C. RESULTS AND DISCUSSION

F-tests of the difference in group means were not able to differentiate the two respondent groups significantly on any of the three F Scales. In addition, the Social Responsibility scale did not distinguish significantly between the subjects who responded to the letter and those who chose not to do so.

There are several possible explanations for the negative findings of the research. First, the translations may have been done improperly, thereby distorting the scales. Although this is possible, it is very unlikely to have occurred because the questionnaire was translated with a great deal of care. Also, the generally accepted rules of translation were followed closely.

Second, the two scales may be culture-bound and therefore not appropriate for use in other societies. However, with respect to the F Scale, it has been

used with apparent success in several cross-cultural studies (8, 10). No information was available on the use of the Social Responsibility Scale outside the United States.

Third, the behavioral experiment may not represent an authoritarian act to the student. If this is correct, there would be no reason to hypothesize that the subjects who responded to the letter would score any differently on the F Scale than those subjects who were administered the questionnaire during the second phase of the experiment. However, it is the researchers' belief that a personal letter written to a student of a university by that university requesting him or her to act in some way is an authoritarian act to that particular student. Additional support to this belief is the fact that several of the students after filling out the questionnaire expressed anger at being asked to participate in the study. This would seem to demonstrate that the subjects felt compelled to respond to the letter from the university. Also, this request by the university was not inconsistent with similar requests the university makes upon its students from time to time.

Fifth, there may have been something peculiar about students that the researchers were not able to locate. If these nonrespondents had completed the questionnaire, the results of the study might have been different. Every effort was made to locate these individuals. In some cases students had dropped out of school and left town, others had moved and left no forwarding address, while still others kept such erratic hours that they were virtually impossible to locate. The researchers made up to four attempts to locate the subjects. If, after this, it was not apparent that the individual would shortly be located, he or she was excluded from the study.

Sixth, it is possible that the three subscales that were tested do not measure in a behavioral context what they have been assumed to measure. As was stated earlier in the paper, most if not all of the validity tests of the F Scale were based on attitudes. If the assumptions concerning the present experiment are correct, then it appears that at least the three segments of the F Scale which were tested do not measure the authoritarian-submissive trait.

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THE EFFECTS OF TASK AMBIGUITY AND EXPECTANCY
CONTROL GROUPS ON THE EXPERIMENTER
BIAS EFFECT*

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SUMMARY

The present study was designed to investigate the effects of task ambiguity and expectancy control groups on the Experimenter Bias Effect (EBE). The results indicated that the main effects of Induced Expectancy, Ambiguity, and Actual State (actual pre-established score differences on the test protocols), as well as the interaction of Ambiguity \times Induced Expectancy and Ambiguity \times Actual State, were all significant at the .01 level. The Ambiguity \times Induced Expectancy interaction indicated that Induced Expectancy had an effect only when subjects were given ambiguous criteria with which to score the test protocols. The Ambiguity \times Actual State interaction indicated that the high ambiguity condition resulted in inaccurate scoring, while low and medium ambiguity did not. Finally, the main effect of Induced Expectancy was small when compared to the Actual State effect, suggesting that some of the experimenter bias effects in the literature may have been obtained because basically unscorable stimuli were used.

A. INTRODUCTION

Recent studies in the area of the Experimenter Bias Effect (EBE) have raised questions regarding the validity of certain experimental findings in psychology. As a result, some critics have begun to look with disfavor upon psychological research. Masling (6) pointed out that "it would be easy to conclude that the entire field of psychological experimentation has been so corrupted by extraneous influences that no experimental results or test findings can be taken at face value" (6, p. 91). Despite a growing concern about the possibility that an experimenter's expectancies may bias the results, there has been a paucity of research which has clarified the circumstances under which

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the EBE may occur. The purpose of the present study was to investigate the effects of the variables task ambiguity and actual state on the EBE.

The EBE, as postulated by Rosenthal (9), that experimenters, through subtle, unintentional means, communicate their expectations, desires, and biases to their subjects and thus influence the outcome of the results has been questioned by Barber and Silver (1). Rather, they stated that the significant results of EBE research may be due to accidental mistakes in observation, interpretation, or recording of data, or to intentional communications by student experimenters, or to erroneous assumptions in statistical analyses of data.

One purpose of the present study was to ascertain whether misinterpretation of the data alone—that is, *E* effects on *E*'s own coding behavior—is sufficient to produce an EBE. Although Johnson and Adair (5) tried to control for this error by making film recordings of the *S-E* interaction, there may have been recording errors made by the judges of the filmed interaction. In order to eliminate any effects which may be the result of unintentional visual or auditory cues from the *E* to the *S*, there was no *S-E* contact. Rather, the *Es* scored previously administered test protocols. Any significant effects will suggest that the bias was due to misinterpretation of the data and that it is possible to have a significant EBE without the *S-E* contact.

One variable which may affect the occurrence of an EBE is the nature of the experimental task. Approximately 60% of studies investigating EBE use the Person-Perception task (12). A number of investigators have used other tasks in an attempt to obtain an EBE [Masling (6), Rorschach; Sheehan (15), verbal operant conditioning; Dusek (3), marble drop; Wessler (17), reaction time]. The results of these latter studies were varied, with some obtaining a significant bias effect, and others not obtaining the effect. It has been suggested (1, 6) that the differences in results of some EBE research may be due to the ambiguity or lack of structure of the experimental task.

Several authors have attempted to study the effects of an ambiguous task as opposed to a more structured task on the EBE (2, 8, 13, 14). The results of these studies were inconsistent but suggest that the occurrence of the EBE may vary directly as a function of the ambiguity of the experimental task. The present study was the first attempt to vary the ambiguity of the same task from highly ambiguous to highly structured.

As in the basic paradigm used by Rosenthal, each of the *Es* was presented with a task in which he was given instructions to expect either high, medium, or low scores on the previously administered test protocols. Since the test protocols given to all three expectancy groups were the same, any scoring

differences among these groups can be attributed to the induced expectancy instructions.

The second variable to be examined was task ambiguity. It is possible that the results obtained in EBE research may not be due to the induced expectancy, but may, in fact, be due to some ambiguity in the task. An interaction between ambiguity and induced expectancy is hypothesized with induced expectancy operating only in the most ambiguous task.

The third variable included was the use of expectancy control groups. Rosenthal (10) suggests that treatment and expectancy effects be separated through the addition of expectancy control groups. Typically, research designs have completely confounded treatment effects and expectancy effects. In addition, by including real (actual state) differences, it is expected that the effects of induced expectancy will be small.

The final intent of this study, although not directly tested for, is controlled in the overall set-up of the experiment. The *S-E* interaction, as a possible source of the bias transmission, is eliminated by having the *Es* deal only with previously administered protocols. This control is being utilized in an attempt to ascertain the distinction between cues transmitted from *E* to *S* and misinterpretation of the data, as the source of the bias transmission.

B. METHOD

1. Experimenters

Two-hundred seventy undergraduates, males and females, were recruited from introductory psychology courses. Their task was to score previously reproduced children's drawings on the Vane Kindergarten Test [VKT (16)]. There was no *E-S* contact.

2. Apparatus

The protocols presented to the student scorers consisted of children's drawings of the three geometric designs found on the VKT (cross, square, hexagon). These protocols were obtained from the original standardization protocols of the VKT, and scored separately by two psychologists. Only those designs which they scored equally were used to insure a $+1.00$ scorer reliability. The scoring criteria were selected from those used on the actual test. They consisted of verbal statements regarding the quality of the child's reproduction of the geometric figure, numerical scores in line with these, and several pictorial examples representative of the different possible scores. In this experiment, the scoring criteria differed for the three levels of ambiguity.

All three groups received scoring criteria with the verbal statements and corresponding numerical scores. However, in the Low Ambiguity condition they received six pictorial scoring examples; in Medium Ambiguity they received three examples; and in High Ambiguity they received zero examples.

3. Procedure

Each *E* received a folder with 30 test protocols to score. There were 10 *Es* in each of 27 groups which differed according to the scoring criteria they received (High, Medium, or Low Ambiguity); the induced outcome expectancy (High, Low, and Middle Induced Expectancy); and the actual numerical outcome of the protocols (High, Middle, or Low Actual State).

In each folder there were instructions included for all *Es*. They explained to the *E* that he was participating in an experiment to see how well college students could score children's tests. They further explained that the tests would come from children in one of three classrooms, an accelerated class, a regular class, or a class for slow learners. In addition, they were given instructions on how to score the designs.

Following these instructions, the induced expectancy instructions were included for the three different expectancy groups. These consisted of a verbal description of the type of class the drawings were from (accelerated, regular, or slow) and what a child from that class was capable of performing. Then there were specific numerical expectancies given for each of the three types of classes.

The Actual State condition was established by including protocols whose actual numerical value fell in line with the numerical expectancies given to the *Es* for each of the three types of classes.

Finally, the scoring criteria given to the scorers included either 6, 3, or 0 pictorial examples, these establishing the low, medium, and High Ambiguity groups, respectively.

C. RESULTS

A $3 \times 3 \times 3 \times 6$ factorial analysis of variance was used in order to analyze the data, Induced Expectancy (High, Medium, Low) \times Ambiguity (High, Medium, Low) \times Actual State (High, Medium, Low) \times Blocks of Protocols (six blocks of five protocols each). The latter variable was included in order to determine if there were any changes in the first three variables as a function of experience with the task. Since there were none, this variable will not be discussed further.

The main effects were all significant at the .01 level: Actual State, $F(2,243) = 669.31$; Induced Expectancy, $F(2,243) = 16.02$; and Ambiguity, $F(2,243) = 56.46$.

The three mean scores for the High, Middle, and Low Actual States were 7.72, 5.13, and 2.32, respectively. A Newman Keuls test performed on these means indicate that there was a significant difference at the .01 level between all three pairs of means, indicating that the *Es* scored the protocols in line with the pre-established Actual State of the protocols.

For the Induced Expectancy, the mean scores for the High, Middle, and Low instructions were 5.50, 5.01, and 4.67, respectively. The Newman Keuls indicated that there was a significant difference at the .05 level between the Middle and Low instructions, and a significant difference at the .01 level between the Middle and High means and between the Low and High means. The *Es* scored the protocols according to their expectancies which were established by the instructions.

The three mean scores for the Low, Medium, and High Ambiguity conditions were 5.52, 5.50, and 4.15, respectively. A Newman Keuls indicated a significant difference at the .01 level between the High and Low means and between the Medium and High means for Ambiguity. There was no difference between the Medium and Low means. In the High Ambiguity situation, the *Es* scored the protocols lower than in the other two conditions.

The interaction of Induced Expectancy \times Ambiguity was significant, $F(4,243) = 6.63$, $p < .01$ (see Figure 1). An *F* test on each of the Ambiguity simple main effects indicated that the differences in the Expectancy means for the High Ambiguity condition (5.10, 4.16, and 3.20, respectively) were significant, $F(2,243) = 27.81$, $p < .01$. A Newman Keuls test of significance indicated that there was a significant difference between all three pairs of means. For the Medium and Low Ambiguity conditions, the *F*s were non-significant: Medium (5.63, 5.49, and 5.41, respectively), $F(2,243) = 1$; and Low (5.79, 5.40, and 5.39, respectively), $F(2,243) = 1.58$. Only for High Ambiguity did the Induced Expectancy play a role.

The interaction of Ambiguity \times Actual State yielded $F(4,243) = 23.72$, $p < .01$ (Figure 2). A graph of the pre-established means for the Actual State is also included in Figure 2. An *F* test on each of the Ambiguity simple main effects indicated that there was a significant difference between the means at the .01 level for all three levels of Actual State: High (5.92, 4.01, and 2.51, respectively), $F(2,243) = 89.95$; Medium (8.62, 5.74, and 2.17, respectively), $F(2,243) = 319.44$; and Low (8.64, 5.65, and 2.28, respectively),

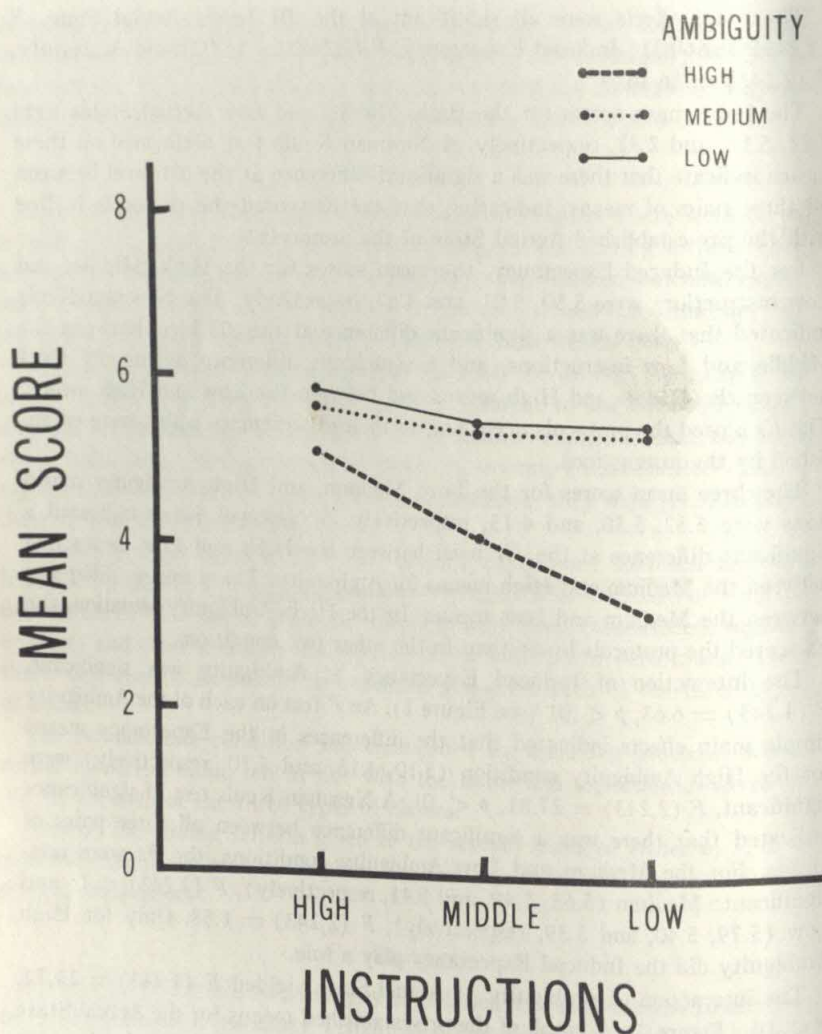


FIGURE 1

MEAN SCORES FOR THE INTERACTION OF AMBIGUITY \times INDUCED EXPECTANCY
 $N = 180$ observations per point (30 Ss \times 6 Blocks of Protocols).

$F(2,243) = 309.42$. The Newman Keuls indicated that there was a significant difference between each of the pairs of means for each of the three levels of Ambiguity. In the Low and Medium Ambiguity levels, the E_s were able

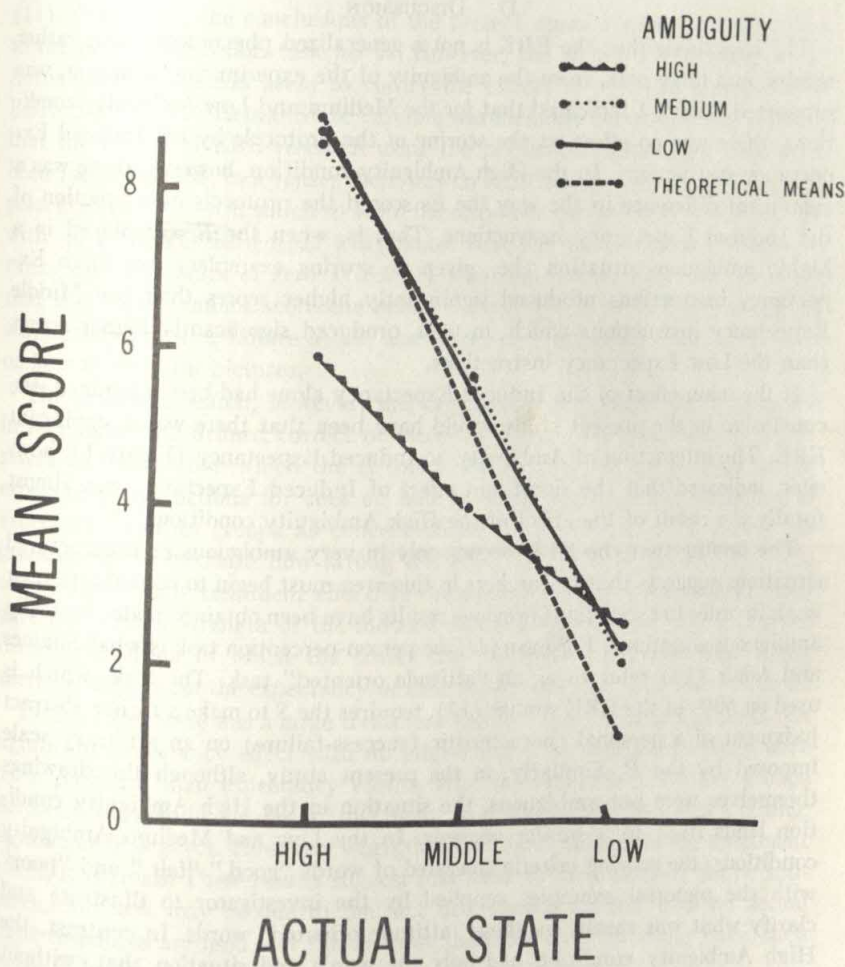


FIGURE 2

MEAN SCORES FOR THE INTERACTION OF AMBIGUITY \times ACTUAL STATE $N = 180$ observations per point (30 Ss \times 6 Blocks of Protocols).

to score more accurately than in the High Ambiguity condition. The pre-established mean scores for the three conditions which were derived from the scoring by the psychologists were 8.73, 5.03, and 1.16 for the High, Middle, and Low Actual State groups, respectively.

D. DISCUSSION

The hypothesis that the EBE is not a generalized phenomenon, but rather results, in a large part, from the ambiguity of the experimental situation, was supported. Figure 1 indicated that for the Medium and Low Ambiguity conditions, there was no effect on the scoring of the protocols by the Induced Expectancy instructions. In the High Ambiguity condition, however, there was a significant difference in the way the *Es* scored the protocols as a function of the Induced Expectancy instructions. That is, when the *E* was placed in a highly ambiguous situation (i.e., given no scoring examples), the High Expectancy instructions produced significantly higher scores than the Middle Expectancy instructions which, in turn, produced significantly higher scores than the Low Expectancy instructions.

If the main effect of the Induced Expectancy alone had been examined, the conclusion in the present study would have been that there was a significant EBE. The interaction of Ambiguity \times Induced Expectancy (Figure 1), however, indicated that the significant effect of Induced Expectancy was almost totally the result of the effect of the High Ambiguity condition.

The finding that the EBE occurs only in very ambiguous or unstructured situations suggests that researchers in this area must begin to re-evaluate their work in order to ascertain if previous results have been obtained under basically ambiguous situations. For example, the person-perception task is what Shames and Adair (14) refer to as an "attitude oriented" task. The task, which is used on 60% of the EBE studies (12), requires the *S* to make a rather abstract judgment of a personal characteristic (success-failure) on an arbitrary scale imposed by the *E*. Similarly, in the present study, although the drawings themselves were not ambiguous, the situation in the High Ambiguity condition lends itself to a similar analysis. In the Low and Medium Ambiguity conditions, the scoring criteria consisted of words "good," "fair," and "poor" with the pictorial examples supplied by the investigator to illustrate and clarify what was meant by these "attitude oriented" words. In contrast, the High Ambiguity condition had only the words and situation that, without the visual examples, was similar to the Rosenthal person-perception task, in that both tasks are subject to an abstract value judgment by the *S*. The results of the present study suggest that the significant findings in the person-perception studies may be the result of a task bias due to the lack of criteria with which to judge the pictures.

A second way in which the person-perception task may be viewed as a task bias is that the results may be dependent upon the choice of neutral pictures

(11). Ostensibly, the conclusions of the present study cannot be generalized to the person-perception task *per se*. However, the results obtained from the Actual State condition seem to clarify the effects of stimulus ambiguity in EBE research. The Actual State variable was included because it was possible that the results of EBE research using the person-perception test may have been found because, in a sense, there was no right answer for the *S*. The scale presented to the *S* with which to score the responses ranged from -10 to $+10$, with no zero. Yet Rosenthal (10) states that the photos chosen evoked a rating on the average of zero. It may be that this is ambiguous for the *Ss* in that they really cannot score the photos accurately, if in fact a face can be scored for success or failure at all, and therefore must look to the *E* for cues on how to score the pictures.

The present research, however, was designed to include stimuli which did in fact have well defined correct or incorrect scores. Thus the stimuli themselves had cues upon which the *E* could rely without having to look to the expectancy instructions for cues on how to score the protocols. The use of expectancy control groups as conceptualized by Rosenthal (10) allows the investigator to compare how strong the effect of induced expectancy is in comparison to any treatment effect. In the present study, it was used to compare the relative strength of the induced expectancy with the effects derived from a condition in which the scorer has the benefit of right and wrong answers, aside from the expectancy or cues from the *E*, to judge the protocols.

In this case, there was a large treatment (Actual State) effect and small but significant expectancy effect with no interaction. The treatment effects were more powerful than expectancy effects. Had the expectancy control groups not been included in the design, one might have concluded there was a strong, significant bias effect. However, when the effect is compared to the treatment effect, it is small. These results suggest that some of the effects of the person-perception task may be due to the fact that neutral stimuli with no actual right responses are used and the *Ss* must therefore look for other cues, such as the induced expectancy.

The results also indicated a significant two-way interaction between Actual State \times Ambiguity (Figure 2). The figure shows that for Low and Medium Ambiguity, the *Es* scored closer to the actual pre-established means regardless of induced Expectancy. In the High Ambiguity condition, the scores were different from the actual means. The results indicated that while in the less ambiguous situation the *Es* were able to score the protocols quite accurately, in the ambiguous situation they were unable to score them accurately. These

results are in line with those of Miller and Chansky (7) and Jastak and Jastak (4), who found that when scoring criteria on the Wechsler Scale for Children were ambiguous (i.e., vocabulary) there was low agreement among scores. Not only does ambiguity increase the likelihood of expectancy operating, but it also increases the inaccuracy in actual scoring.

Finally, the results suggest that misinterpretation effects alone are enough to produce the bias effect and that these may be the consequence of ambiguous scoring instructions. It may not be necessary to explain the EBE as the result of unconscious, unintentional communication of the *E* to the *S*. Rather this research suggests that the EBE can result from misinterpretation by the *E* in ambiguous situations and not necessarily by the *S-E* interaction. It is suggested that the EBE may be minimized through the use of more carefully designed and executed studies in which ambiguity is eliminated.

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CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

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PINMEN IN INDIA*

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The Pinmen Test, consisting of 10 cards each portraying stick figures engaged in some activity representative of one of Murray's needs, was given to some samples of Indian students to investigate its utility for the cross-cultural measurement of personality.¹ These cards, plus dummy cards of objects, are presented in random order, one every five seconds to subjects individually. Subjects then have to recall the cards. Needs recalled late are regarded as repressed. The test variables are narcissism, aggression, exhibitionism, sex, harm avoidance, affiliation, nurturance, dominance, achievement, and rejection.

Three samples were used—24 male postgraduates in Kerala University, 14 male postgraduates and 29 female postgraduates in Mysore University—which were comparable to the British groups of Forrest and Lee.¹ The Mysore and Kerala groups are separate, since these states have distinct languages and traditions.

Two kinds of data were obtained from this investigation: clinical data based on subjects' descriptions of the cards, and the objective results based on the order of recall of the cards. Comparison with British samples showed that there is agreement that nurturance is recalled early (i.e., is an openly felt need) and that narcissism and exhibitionism are recalled late. Sex and

* Received in the Editorial Office, Provincetown, Massachusetts, on March 8, 1974. Copyright, 1975, by The Journal Press.

¹ Forrest, D. W., & Lee, S. G. Mechanisms of defense and readiness in perception and recall. *Psychol. Monog.*, 1962, **74**(4), Whole No. 523. Also Murray, H. A. *Explorations in Personality*. New York: Oxford, 1938.

harm avoidance were recalled early in Britain, but not in India, while aggression was late in India but early in Britain. However, to interpret these findings it is necessary to look at the card descriptions, since some cards were interpreted differently in India, highlighting the problems, even with materials so simple, of constructing personality tests suitable for cross-cultural use. The sex and achievement cards illustrate this clearly.

About 40% of the Indians misinterpreted the sex card (a couple embracing on a bed). It was described, for example, as two men in a boat, two men on a tightrope, two men sitting on a wall. Questioning revealed that the term "men" intended male individuals in these cases. Sometimes "men" was used meaning people. Freudians could regard this as a perfect example of sex repression, especially in these Indian cultures sexual contact between young people of the opposite sex is minimal, and marriages are still arranged even among educated people.

The achievement card (a man climbing a ladder) was not always understood. Many subjects saw it as house painting. This means they fully recognized the ladder, but the significance and importance of it as a symbol seemed to be missing. Only three subjects mentioned *climbing* the ladder. Five subjects failed to understand the picture at all, seeing it as a man against a pattern of horizontal and vertical stripes.

From these data it is concluded that the objective comparisons of results must be interpreted with great caution and that the construction of a cross-cultural personality test is possible with simple materials, although extensive research with the basic decisions is necessary.

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ATTITUDE AND PERSONALITY CHARACTERISTICS OF AUSTRALIAN PROTESTANT FUNDAMENTALISTS*¹

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GORDON STANLEY AND PETER VAGG

The relationship between religious belief and attitudinal variables has been an area of continuing research interest.² However, despite this fact, little attention has been given to the question of how the same beliefs may function in different sociocultural settings. While the U. S. and Australia are similar in many ways, relationships between measures of authoritarianism and ethnocentrism for Australian Catholic samples differ from the results typically obtained in the U. S.³ Much of the U. S. research⁴ implies that religious fundamentalism is associated with racial prejudice. This implication has not been studied directly in the Australian context.

In the present study a group of 51 fundamentalist students from an Australian Protestant Bible College were compared on personality and attitude measures with a group of 291 undergraduates at the University of Melbourne. The mean age for the fundamentalists was 23.33 ± 6.44 and for the undergraduates it was 21.44 ± 8.35 . A ratio of females to males was approximately 1.5:1 in both samples. Each sample was tested in one group with a questionnaire consisting of the 40 item attitude scale of Eysenck together with the 57 items from Form B of the Eysenck Personality Inventory.⁵ Three attitude factor scales and four personality factor scales were derived from a Promax solution to an item factoring of the data from the undergraduate sample.

Of the four personality factors, only the factor scale clearly identified as neuroticism differentiated between the groups, with the fundamentalists having a lower score on this variable. All three attitude factor scales produced significant differences between the groups. On both moral radicalism

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¹ A more extended report is available on request to the authors.

² Brown, L. B., Ed. *Psychology and Religion*. Middlesex, England: Penguin, 1973.

³ Knopfmacher, F., & Armstrong, D. The relation between authoritarianism, ethnocentrism, and religious denomination among Australian adolescents. *Amer. Cath. Sociolog. Rev.*, 1963, 24, 99-114.

⁴ Eisenman, R., Cole, S. N. Prejudice and conservatism in denominational college students. *Psychol. Rep.*, 1964, 14, 644.

⁵ Eysenck, H. J. *The Psychology of Politics*. London: Routledge, 1954.

and political radicalism the fundamentalists scored at the conservative end of the scale, while the undergraduates scored at the radical end of the scale. Moral radicalism was identified by items concerning such moral issues as abortion, premarital sex, and easy divorce. Political radicalism had items involving socialism, national sovereignty, and freedom of discussion. The conservative stand of the fundamentalists on moral and political radicalism was expected from previous research.⁶

The mean score on socioethnic radicalism, though lower than the undergraduates, for the fundamentalists was in the radical direction rather than at the conservative pole. Socioethnic radicalism involved items concerning oppression of racial minorities, treatment of criminals, and equality for women. It would appear that while the Australian Protestant fundamentalist student is conservative, he is not overtly racially prejudiced in the manner of his American counterpart. Problems of sampling are enormous in any serious cross-cultural comparison, and therefore any conclusions must be viewed with great caution. Nevertheless such results as presented here reinforce the need for careful study of the functional differences between Australian and American religious groups.

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⁶ Stanley, G. Personality and attitude characteristics of fundamentalist theological students. *Austral. J. Psychol.*, 1963, 15, 121-123.

CHILDREN'S ATTITUDES TOWARDS SOCIAL CHANGE IN RELATION TO PARENTAL ATTITUDES TOWARDS CHILD REARING*¹

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Two well known studies of prejudice in children² concluded that authoritarian attitudes of parents lead to prejudice and ethnic bias in children. The present investigators felt that the same pattern of parental attitudes would emerge for the conservative child in view of the significant correlation reported between ethnocentrism and conservatism by Levinson.³ It was theorized further that punitive and rejective child rearing practices result in feelings of insecurity in the child as reported by Radke⁴ and these would later become attached to new ideas and modes of living. So it was hypothesized that significant differences between the responses of parents of conservative and radical children would be found on the different statements concerning attitudes towards child rearing.

The sample in the present study consisted of 80 Panjabi children of 11th class (mean age 16.7 years) of Chandigarh schools and their parents—80 mothers and 80 fathers.

A scale consisting of 60 items to be used with younger group was adapted from Promila's C-R scale⁵ of 120 items measuring adults' attitudes towards social change. The scale was administered to 600 subjects out of which 40 subjects with highest scores (conservatives) and 40 with lowest scores (radicals) were selected for the final study.

To measure attitudes of parents towards various aspects of child rearing,

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¹ The authors wish to thank Miss V. Sarohia, who helped in collecting the data.

² Frenkel-Brunswik, E. A study of prejudice in children. In T. W. Adorno *et al.* (Eds.), *The Authoritarian Personality*. New York: Harper, 1950.; Harris, D. E., Gough, H. C., & Martin, W. E. Children's ethnic attitudes. II. Relationship to parental beliefs concerning child-training. *Child Devel.*, 1950, **21**, 169-181.

³ Levinson, D. J. Politico-economic ideology and group membership in relation to ethnocentrism. In T. W. Adorno *et al.* (Eds.), *The Authoritarian Personality*. New York: Harper, 1950.

⁴ Radke, M. J. The relation of parental authority to children's behaviour and attitudes. Cf. G. G. Thompson, *Child Psychology*. Bombay: Times of India Press, 1965.

⁵ Promila. Certain personality correlates of social change. Unpublished Doctoral dissertation, University of Panjab, India, 1970.

a scale used by Sarason, Davidson, Lighthall, Waite and Ruebush⁶ was administered to them.

Results were obtained on the combined sample of mothers and fathers. A chi square test was applied, and significant differences were obtained on 19 out of 38 items. Out of these 19 items 14 were related to authoritarian and punitive attitudes and were endorsed more frequently by the parents of conservative children. The remaining five items pertaining to democratic attitudes were endorsed more frequently by the parents of radical children. These results supported our hypothesis. Clearest evidence with regard to differences in parental attitudes towards child rearing was obtained on items pertaining to punitiveness, developing independence, suppression of aggression, authoritarian and democratic attitudes. The argument that the conservative or the radical child may simply be learning these attitudes from parents who themselves are either conservative or radical may be countermanded by mentioning that the correlation between the parental attitudes towards child rearing and their social attitudes is far from perfect.

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⁶ Sarason, S. B., Davidson, K. S., Lighthall, F. F., Waite, R. R., & Ruebush, B. K. *Anxiety in Elementary School Children*. New York: Wiley, 1960.

REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, **96**, 295-296.

HELPING BEHAVIOR AND ATTITUDE CONGRUENCE TOWARD CAPITAL PUNISHMENT*

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Karabenick, Lerner, and Beecher² found that voters at the polls on Election day, Nov. 7, 1972, were more likely to help a campaign worker handing out literature when that campaigner was supporting the candidate of their choice (attitude congruence) than when supporting the opposition candidate (attitude incongruence). This effect was stronger for McGovern than for Nixon supporters. The present study tested whether these results would obtain in relation to another attitude dimension: Capital Punishment. The field interaction occurred when either a male or female college student approached a male or female confederate holding a large sign indicating either support for or opposition to capital punishment. Helping consisted of assistance by the subject in retrieving literature dropped by the confederate (direct physical help, holding the sign, verbal encouragement) in the process of handing it to the subject. A second confederate coded the interaction at a distance and then ascertained the subject's attitude toward capital punishment in the guise of a student poll on the topic.

A total of 647 interactions were coded. Any interaction involving *only* taking literature was dropped from the analysis (because it is ambiguous),

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¹ Reprint requests should be sent to the first author at the address shown at the end of the article.

² Karabenick, S. A., Lerner, R. M., & Beecher, M. D. Relation of political affiliation to helping behavior on election day, November 7, 1972. *J. Soc. Psychol.*, 1973, **91**, 223-227.

leaving 498 interactions. Helping took place in 68% of the interactions. A Subject attitude \times Subject sex \times Confederate attitude \times Confederate sex partition of χ^2 was performed with the use of the dichotomous (help vs no help) dependent variable.³ The total χ^2 is significant (27.46, $df = 15$, $p < .05$) indicating differences between conditions. The critical test of the attitude-congruence helping relationship is the Subject attitude \times Confederate attitude interaction which is not significant. Thus, there is no significant difference in the rate of helping in the two attitude conditions as a function of the subject's attitude toward capital punishment. However, there is a trend in the expected direction: 76% of both pro- and anti-capital punishment subjects helped with an anticapital punishment sign, and the pro-capital punishment subjects helped more (67%) than the anti-capital punishment subjects helped with an anti-capital punishment sign, and punishment sign. The only significant effect is an overall greater helping rate with an anti (76%) than a pro-capital punishment confederate (60%; $\chi^2 = 14.53$, $df = 1$, $p < .001$). When tested separately, the anti-capital punishment subjects manifested the predicted congruence effect ($\chi^2 = 13.54$, $df = 1$, $p < .001$), while the pro-capital punishment subjects did not ($\chi^2 = 1.5$, ns). The lack of a significant interaction appears due to the pro-capital punishment subjects who, despite their attitude, helped more anti than pro-capital punishment persons in need of assistance. If all subjects are combined, attitude congruent interactions resulted in more helping (73%) than incongruent ones (63%), and this difference is significant ($\chi^2 = 4.62$, $df = 1$, $p < .05$). This is probably due to the preponderance of subjects (65%) having anti-capital punishment attitudes. It thus appears as if the failure to find the expected interaction between subject and confederate attitude conditions is attributable to the nondifferential behavior of the pro-capital punishment subjects. One suggestion is that such subjects' attitudes were less polarized (intense) than those with anti-capital punishment attitudes.

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³ A table giving the proportion of subjects who helped in each condition and the complete statistical analysis can be obtained from the first author.

GROUP RISK TAKING SHIFTS WITH A PAYOFF RESPONSE MODE*

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Studies of group risk-taking shifts (GRTS) among American subjects have relied heavily on a single dependent variable: the Choice Dilemma Questionnaire (CDQ).¹ The CDQ presents choice conflict situations and asks subjects to state the lowest probability of success at which they would advise taking the risk. To argue for the generality of the phenomenon, at least two things need to be demonstrated: (a) that GRTS occur in other than CDQ situations, and (b) that GRTS occur with other dimensions of risk than the probability of success. A number of studies have assessed GRTS with other situations, such as gambles, but, by and large, they have retained the probability response mode as the measure of risk.

The ratio between the stake and the payoff also affects risk. If both the stake and the probability of success are held constant, risk varies inversely with the level of the payoff for success. The present study investigates GRTS when subjects respond to CDQs through different response modes—either by setting the probability level of success or by setting the level of payoff at which they would advise taking a risk.

Six CDQ items (A, B, C, F, K, and L)² were selected because (a) they had shown a risky shift in other research, and (b) they could be altered to fit a payoff response mode. The altered items retained the same basic situations but presented a fixed probability of success and a set of alternative successful outcomes increasing in value. Subjects chose the least valued outcome at which they would advise the risk to be taken.³

Fifty-four introductory psychology students were subjects. Half completed the procedures with the probability mode CDQs; half with the payoff mode CDQs. An M-X-M design was followed with subjects completing the CDQ individually before and after group discussion. Four, five, or six mem-

* Received in the Editorial Office, Provincetown, Massachusetts, on April 16, 1974. Copyright, 1975, by The Journal Press.

¹ Cartwright, D. Risk taking by individuals and groups: An assessment of research employing Choice Dilemmas. *J. Personal. & Soc. Psychol.*, 1971, 20, 361-378.

² See Appendix E, Kogan, N., & Wallach, M. A. Risk Taking: A Study in Cognition and Personality. New York: Holt, Rinehart & Winston, 1964.

³ Copies of the payoff response from CDQ items are available from the author, at the address shown at the end of this article.

ber, same-CDQ-form groups were asked to spend about five minutes discussing each item. Consensus was not required. Subjects also rated their ease of understanding and ease of answering each item. The two sets of items did not differ significantly on either of these dimensions.

Significant GRTS were found for each CDQ form. The probability response form produced a mean risky shift of $-.75$ scale points per item ($t = 2.98$, $df = 26$, $p < .01$), and the payoff response form produced a mean risky shift of $-.43$ ($t = 2.55$, $df = 26$, $p < .02$). The two response forms did not differ significantly in the magnitude of the risky shift produced ($t = 1.09$, $df = 52$). None of the shifts for individual items attained significance.

It appears that the GRTS may not be an artifact of the particular response mode used to assess risk. GRTS were found when the dependent variable called for responses along a payoff dimension, as well as along a probability dimension. These findings add support for the generality of GRTS.

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AN INDEPENDENT VALIDATION OF THE LOST-LETTER TECHNIQUE*

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The lost-letter technique (LLT) was developed to eliminate the problem of reactivity by assessing attitudes via the return rates of unmailed letters which are dropped in public places and on which attitude objects are represented in the identities of the addressees.¹ However, the validity of differential rates of return has been maintained on the basis of their statistical reliability and *a priori* expectations for them. The present study compared the results of an assessment of attitudes by the LLT with those of a contemporaneous, independently conducted plebiscite. Both assessments were directed toward the attitudes of people in a number of small coastal towns in Maine toward the development of oil refining facilities in their state, and both were non-reactive in that they preserved the anonymity of respondents. The oil issue seemed particularly appropriate for the present study because of its apparently high affective impact. A secondary purpose of this study was to evaluate the possibility of employing the LLT in a sparsely populated rural location. To provide a basis for comparison, two inland cities were selected for application of the LLT in addition to the coastal region in which the plebiscite had been conducted.

Sixty letters were dropped in coastal towns in and near Machiasport, Maine, where the plebiscite had been held five months earlier. Thirty-six were dropped in two small inland cities. Each group of letters was divided equally among three addressees: Committee to Promote Oil Development in Maine, Committee to Stop Oil Development in Maine, and Committee on Oil Development in Maine. All were dropped in stores, phone booths, service stations, and streets, during a three-day period, in coastal towns the first day, in one city the second day, and in the second city the third day.

* Received in the Editorial Office, Provincetown, Massachusetts, on May 7, 1974. Copyright, 1975, by The Journal Press.

¹ Webb, E. J., Campbell, D. T., Schwartz, R. P., & Sechrest, L. *Unobtrusive Measures: Nonreactive Research in the Social Sciences*. Chicago: Rand McNally, 1966. Berkowitz, W. R. Spectator responses at public war demonstrations. *J. Personal. & Soc. Psychol.*, 1970, 14, 305-311. Merritt, C. B., & Fowler, R. G. The pecuniary honesty of the public at large. *J. Abn. & Soc. Psychol.*, 1948, 43, 90-93. Milgram, S., Mann, L., & Harter, S. The lost-letter technique: A tool of social research. *Public Opin. Quart.*, 1965, 29, 437-438.

Return rates for pro-oil, anti-oil, and control letters were as follows: coastal towns, 55%, 65%, and 75%, respectively; inland cities, 83%, 75% and 92%; and overall, 66%, 69%, and 81%. Identity of addressee was unrelated to pattern of return ($\chi^2 = 1.2$, $df = 2$, n.s.). Letters dropped in cities were somewhat more likely to be returned than those dropped in towns ($\chi^2 = 3.7$, $df = 1$, $p < .10$), although the relative rates for different addressees remained similar.

The results of the plebiscite conducted in the towns were 1391 in favor of oil development and 1158 against.² This pattern, 55% pro and 45% anti, was not significantly different ($\chi^2 = .7$, $df = 1$, n.s.) from that of the LLT returns (of the noncontrol letters returned, 46% were pro and 54% anti).

The results of the present study provide strong independent support for the validity of the LLT as a measure of attitudes toward an important political and social issue. Results obtained from it and a plebiscite on the same issue were essentially similar. Therefore, the future use of the LLT seems warranted, within the sampling limitations of the present study, especially where an equally nonreactive alternative is unavailable. In addition, it would appear that the LLT may be used in sparsely populated rural areas.

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² *Bangor Daily News*, April 10, 1970.

EFFECTS OF VICTIM COMPETENCE AND DEFENDANT OPPORTUNISM ON THE DECISIONS OF SIMULATED JURORS*

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Recent research^{1,2} indicates that defendant and victim characteristics may influence the severity of sentences assigned to defendants in simulated jury situations. In the present study, case accounts of a crime were prepared to test the popular assumption that severity of juridic judgment may be increased by eliciting sympathy for the victim, especially when this is accomplished by highlighting the extent to which opportunistic advantage had been taken of the victim's frailties.

The 450-word case accounts, adapted from Sigall and Ostrove,¹ described the way in which a 23-year-old defendant induced a 72-year-old retired executive to invest \$2,200 in a nonexistent corporation.³ Half of the accounts included no comment regarding the victim's intellectual functioning (Competent Victim Condition). The other accounts stated that the victim "had recently begun to display impaired judgment and lapses of memory," and that the defendant had been "encouraged and reassured" by the victim's "confused interest" in the proposed investment (Incompetent Victim Condition). Half of the accounts in each of these conditions described a male defendant, and half described a female defendant. Each of these four case accounts was evaluated individually by seven male and seven female introductory psychology students ($N = 56$), and sex of subject was included as the third variable in a $2 \times 2 \times 2$ design.

Ss "sentenced" the defendant to a term of imprisonment by circling a number from 1 to 15. Then on nine-point bipolar scales presented on a separate page the Ss rated the seriousness of the crime, described the victim as helpless-capable, indicated their sympathy for the victim, indicated to what extent

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¹ Sigall, H., & Ostrove, N. Beautiful but dangerous: Effects of offender attractiveness and nature of the crime on juridic judgment. *J. Personal. & Soc. Psychol.*, 1975, 31, 410-414.

² Landy, D., & Aronson, E. The influence of the character of the criminal and his victim on the decisions of simulated jurors. *J. Exper. Soc. Psychol.*, 1969, 5, 141-152.

³ These materials are available from the author at the address shown at the end of this article.

unfair advantage had been taken of the victim, and judged the likelihood that the defendant might sometime repeat a similar crime.

The competent victim was described by the Ss as significantly more capable than the incompetent victim ($F = 20.76$, $df = 1/48$, $p < .001$); thus this manipulation appears successful. Ss were significantly more sympathetic for the incompetent victim ($F = 6.08$, $p < .025$), and tended to feel that more unfair advantage had been taken of the incompetent victim ($F = 3.52$, $p < .08$). However, Ss clearly did not assign greater sentences to the defendant in the incompetent condition ($F = .24$), did not perceive the crime as more serious in that condition ($F = .39$), and did not judge that defendant as more likely to repeat a similar crime ($F = .30$). The effects of Sex of Defendant and Sex of Subject and all interactions were nonsignificant ($ps > .05$).

The results of this study thus cast doubt on the popular assumption that jurors will assign more severe sentences to defendants if they feel sympathy toward the victim and to defendants who, they perceive, have taken opportunistic advantage of the victim's frailties.

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CURRENT PROBLEMS AND RESOLUTIONS

Under this heading appear summaries of data which, in 500 words or less, would increase our comprehension of socially compelling problems, hopefully move us somewhat closer to a solution, and clearly show promise of transcending their own origin in the Zeitgeist; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, 96, 303-304.

MOTIVATIONS FOR URBAN-RURAL MIGRATION*

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Fawcett² and Wohlwill³ have challenged the new population psychology to incorporate study of psychological factors in population distribution and migration. The present study is an exploration of psychological factors in preference for living in rural or small town *vs.* city-metropolitan areas.

A "Lifestyle Preference Survey" (LPS) was constructed with 26 forced-choice items designed to assess relative attraction to or tolerance of positive and negative features of city and small-town/rural life. Representative items are "In a new place I am most likely to be attracted by (a) the trees, flowers, or other plants *or* (b) the architecture" and "I can more readily tolerate the (a) air pollution of a city or (b) isolation of remote rural life." Respondents were also asked to indicate from among the following choices where "home" was during most of their childhood years and where they planned to live after completing their education: rural area, small town, small city (10-25,000), city (25-100,000), or metropolitan area.

The LPS was given to 180 introductory psychology students at a Mid-South state university. An item analysis contrasted 30 Ss (16 M, 14 F)

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¹ With thanks to Carlos Duncan, Mike Henry, and Dan Lee, students and coresearchers in our population psychology class, and to Dr. Mike Nietzel for providing Ss from University of Kentucky. A more detailed report may be obtained from the author.

² Fawcett, J. T. *Psychology & Population*. New York: Population Council, 1970.

³ Wohlwill, J. F. The real population problem: Distribution. *Amer. Psychol.*, 1972, 27, 976-977.

who planned small town or rural residences with a like group who planned to live in metropolitan areas (metro). Twenty of the 26 items differentiated the groups at the .05 level (chi square test). For cross-validation the 16 most discriminating items were construed as a rural orientation scale to scale the LPS for 52 seniors at a private college in a small town near the university. By area of planned residence, mean scores for the seniors were as follows: rural, 14.3; small town, 12.3; small city, 11.5; city, 8.5; and metro, 5.3. The differences among these groups were significant at the .01 level (median test).

A combination of cluster analysis and face validity followed by item analyses identified three relatively independent motivational factors among the 26 items—Naturalism *vs.* technology, Avoidance of metropolitan problems, and Social intimacy of small town *vs.* culture of the city. With no duplication of items, five to seven items were identified as optimally assessing each of the factors. From the university and private college samples 216 Ss (112 M, 104 F) who indicated ultimate residence plans were scored on the three motivation scales. All scales produced regular progressions of mean scores from rural to metro residence plans. Avoidance (7 points maximum) ranged from 6.0 for rural to 2.4 for metro, Social (6 maximum) from 4.7 to 2.2, Naturalism (5 maximum) from 4.2 to 2.2. The greatest adjacent difference was between large city and metro for Naturalism and Avoidance, and between small town and small city for Social.

Scale intercorrelations identified Avoidance as the most general motivation scale, and Social as the least general. For 48 Ss whose residence plans differed two or more intervals from the location of their childhood home, LPS scores were typical of their destinations, not of their origins, confirming that the inventory assesses migratory tendencies and not merely geographic background.

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CROSS-CULTURAL INSIGHT AND EMPATHY AMONG CHINESE IMMIGRANTS TO THE UNITED STATES*¹

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This study is concerned with measuring and identifying correlates of the cross-cultural sensitivity, insight, or empathy that Chinese immigrants living in San Francisco develop with respect to their host culture. The sample consisted of 52 females and 39 males, aged 17 to 66, who had been born overseas, had lived in the United States six months or more, and were attending special adult classes in English. The measure of crosscultural insight and empathy consisted of a Chinese-language version of the Intercultural Insight Questionnaire (ICIQ), a scale previously used in an English-language form to study Arab, Armenian, and American students in Beirut, Lebanon.² The ICIQ consists of 24 pairs of American and British personality trait descriptions, arranged in forced-choice format, such as, "Shows need for friends—:—Shows respect for laws." Subjects are instructed to identify the American trait in each of the pairs. For purposes of the present study, the ICIQ was translated into Chinese and revised after having been back-translated into English. The final Chinese version had a corrected split-half reliability of .60, and the scores of eight bilingual judges on both versions of the test correlated .70 (Pearson product moment). These reliabilities compare favorably with those obtained with the English-language version of the ICIQ: .74 for American university students, and .49 for Lebanese university students whose second language was English.

Subjects who had been in the United States three years or longer had a mean ICIQ score of 13.76 ($SD = 3.24$), whereas those who had been residents a shorter time had a mean score of 12.39 ($SD = 3.07$) ($p < .05$). Furthermore, subjects who had attended Chinese-language schools at the secondary level or higher in their homeland had a mean of 13.48 ($SD = 3.04$), in contrast to the mean of 11.38 ($SD = 2.70$) for those whose previous education had not exceeded the elementary level ($p < .001$). There

* Received in the Editorial Office, Provincetown, Massachusetts, on May, 7, 1974. Copyright, 1975, by The Journal Press.

¹ An extended report of this research may be obtained from the senior author at the address shown at the end of this article. Copies of the English- and Chinese-language versions of the ICIQ are also available on request.

² Lindgren, H. C., & Marrash, J. A comparative study of intercultural insight and empathy. *J. Soc. Psychol.*, 1970, 80, 135-141.

were no significant relationships between ICIQ scores and sex, age, or level of competence in English. The ICIQ mean for the entire sample was 12.94 ($SD = 2.92$), which compares with English-language ICIQ means in the Beirut study of 12.55 ($SD = 2.7$) for Arabs, 14.0 ($SD = 2.83$) for Armenians, and 15.5 ($SD = 3.28$) for Americans.²

Results from the present study are consistent with the commonsense idea that cultural understanding is likely to be enhanced by increased exposure to a host culture. The significantly higher ICIQ scores made by subjects who had more education in their homeland may indicate that increased amounts of schooling in whatever language produced a higher degree of social sophistication, as well as a sharpened awareness of and sensitivity to patterns of social behavior. The nonsignificant relationship between English competence and ICIQ suggests that competence in a host country's language was not in itself sufficient for the development of cross-cultural insight and empathy.

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"DON'T KNOW" RESPONSES AMONG YOUNG ADULTS IN HONG KONG*¹

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It has been argued by Hoadley² that people in Hong Kong are reluctant to make known their opinions on politically sensitive matters. A Gallup-type poll conducted by a survey research organization revealed that questions concerning attitudes towards the police, the government, and the political future of Hong Kong attracted "don't know" responses ranging from 40% to 56%. The reasons for this reluctance seem to be connected with the singular geo-political climate of Hong Kong, and have been discussed elsewhere.³ The experience of the first two authors, who carried out a large scale survey in Hong Kong in 1969, was that although respondents were not wholly unwilling to answer questions on politically sensitive topics, there was more resistance to replying to these questions than there was towards taking up a committed position on politically nonsensitive issues.

Data were collected by means of 1123 interviews carried out among a sample of young people aged 15-29 living in the urban areas of Hong Kong. Information was obtained on a number of socioeconomic background factors and responses were sought to 49 attitude statements drawn principally from the compilations of Shaw and Wright⁴ and Bonjean.⁵ The statements were chosen to tap respondents' attitudes towards a wide range of social institutions and processes, including family structure and relationships, relations with the

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¹ The research on which this paper is based was carried out when the first two authors were members of the Department of Sociology, University of Hong Kong and was financed by a grant from the Nuffield Foundation through the Centre of Asian Studies, University of Hong Kong. Acknowledgement is made to Frank H. H. King, Director of the Centre, and to Andrew Lu, formerly on the research staff of the Centre, now of the Social Research Centre, Chinese University of Hong Kong.

² Hoadley, J. S. "Hong Kong is the lifeboat": Notes on political culture and socialization. *J. Oriental Stud.*, 1970, 8, 206-218.

³ Rear, J. One brand of politics. In K. Hopkins (Ed.), *Hong Kong: The Industrial Colony*. London: Oxford Univ. Press, 1971. Pp 55-139.

⁴ Shaw, M. E., & Wright, J. M. Scales for the Measurement of Attitudes. New York: McGraw-Hill, 1967.

⁵ Bonjean, C. M. Sociological Measurement: An Inventory of Scales and Indices. San Francisco: Chandler, 1967.

wider kin group and the opposite sex, attitudes toward work, the function of trade unions, the police, the role of the government in the economy and satisfaction with life in Hong Kong.⁶ Many of the statements were of a non-contentious nature, but others (the last four of the above groups of statements) were deemed to be politically sensitive; 17 of the 47 statements were classified in this way.

It was hypothesized that respondents would be more likely to answer "don't know" to statements broadly concerned with political issues and government than to those concerned with politically nonsensitive issues and institutions such as the family, work, and so on. In order to test this hypothesis the 47 statements were listed in order of the percentage of "don't know" responses obtained. The median percentage "don't know" response was excluded and the remaining 46 statements were allocated to two groups, having either a high or low proportion of "don't know" responses, depending on which side of the median they fell.

The percentage of "don't knows" was significantly greater for politically sensitive than for politically nonsensitive statements ($\chi^2 = 7.56$, $df = 1$, $p < .01$).⁷ This effect was not connected with the position of a statement in the interview schedule and persisted regardless of the complexity of the replies offered to the respondent ($\chi^2 = 8.60$, $df = 3$, $p < .05$). The hypothesis was therefore supported.

The University of Aston Management Centre
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⁶ The statements are listed in full in Chaney, D. C., & Podmore, D. B. L., *Young Adults in Hong Kong: Attitudes in a Modernizing Society*. Hong Kong: Centre of Asian Studies, University of Hong Kong, 1973. Pp 60-63.

⁷ The χ^2 values were obtained by applying the log likelihood ratio test. See Podmore, D., Chaney, D., & Golder, P. Third parties in the interview situation: Evidence from Hong Kong. *J. Soc. Psychol.*, 1975, 95, 227-231.

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Abstracts	<i>Abst.</i>	Journal	<i>J.</i>
American	<i>Amer.</i>	Mathematical	<i>Math.</i>
Anatomy	<i>Anat.</i>	Measurement	<i>Meas.</i>
Animal	<i>Anim.</i>	Medical	<i>Med.</i>
Applied	<i>Appl.</i>	Mental	<i>Ment.</i>
Archives	<i>Arch.</i>	Monographs	<i>Monog.</i>
Association	<i>Assoc.</i>	Neurology	<i>Neurol.</i>
Attitude	<i>Attit.</i>	Opinion	<i>Opin.</i>
Australian	<i>Aust.</i>	Orthopsychiatry	<i>Orthopsychiat.</i>
Behavior	<i>Behav.</i>	Personality	<i>Personal.</i>
British	<i>Brit.</i>	Personnel	<i>Person.</i>
Bulletin	<i>Bull.</i>	Philosophy	<i>Philos.</i>
Bureau	<i>Bur.</i>	Physics	<i>Phys.</i>
Canadian	<i>Can.</i>	Physiology	<i>Physiol.</i>
Character	<i>Charac.</i>	Proceedings	<i>Proc.</i>
Children	<i>Child.</i>	Psychiatry	<i>Psychiat.</i>
Chinese	<i>Chin.</i>	Psychoanalysis	<i>Psychoanal.</i>
Clinical	<i>Clin.</i>	Psychology	<i>Psychol.</i>
College	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
Comparative	<i>Comp.</i>	Quarterly	<i>Quart.</i>
Consulting	<i>Consult.</i>	Religious	<i>Relig.</i>
Contributions	<i>Contrib.</i>	Research	<i>Res.</i>
Development	<i>Devel.</i>	Review	<i>Rev.</i>
Educational	<i>Educ.</i>	School	<i>Sch.</i>
Experimental	<i>Exper.</i>	Science	<i>Sci.</i>
General	<i>Gen.</i>	Social	<i>Soc.</i>
Genetic	<i>Genet.</i>	Statistics	<i>Stat.</i>
Indian	<i>Ind.</i>	Studies	<i>Stud.</i>
Industrial	<i>Indus.</i>	Teacher	<i>Teach.</i>
International	<i>Internat.</i>	University	<i>Univ.</i>
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- Performance tests for children of pre-school age—R. STUTSMAN
- An experimental study of the eidetic type—H. KLÜVER
- & 4. A study of natio-racial mental differences—N. D. M. HIRSCH
- A psychological study of juvenile delinquency by group methods—J. W. BRIDGES AND K. M. B. BRIDGES
- The influence of puberty praecox upon mental growth—A. GESELL

VOLUME 2—1927

- & 2. The mind of a gorilla—R. M. YERKES
- The role of eye-muscles and mouth-muscles in the expression of the emotions—K. DUNLAP
- Family similarities in mental-test abilities—R. R. WILLOUGHBY
- Coordination in the locomotion of infants—L. H. BURNSIDE
- The mind of a gorilla: Part II. Mental development—R. M. YERKES

VOLUME 3—January-June, 1928

1. An experimental study of the olfactory sensitivity of the white rat—J. R. LIGGETT
2. A photographic study of eye movements in reading formulae—M. A. TINKER
3. An experimental study of the East Kentucky mountaineers—N. D. M. HIRSCH
4. Responses of foetal guinea pigs prematurely delivered—G. T. AVERY
5. Objective differentiation between three groups in education (teachers, research workers, and administrators)—M. B. JENSEN
6. The effect of segregation on the sex behavior of the white rat as measured by the obstruction method—M. JENKINS

VOLUME 4—July-December, 1928

1. Observation and training of fundamental habits in young children—E. A. BOTT, W. E. BLATZ, N. CHANT, AND H. BOTT
- 2 & 3. Determination of a content of the course in literature of a suitable difficulty for junior and senior high school students—M. C. BURCH
- 4 & 5. Methods for diagnosis and treatment of cases of reading disability—M. MONROE
6. The relative effectiveness of lecture and individual reading as methods of college teaching—E. B. GREENE

VOLUME 5—January-June, 1929

1. The age factor in animal learning: I. Rats in the problem box and the maze—C. P. STONE
2. The effect of delayed incentive on the hunger drive in the white rat—E. L. HAMILTON
3. Which hand is the eye of the blind?—J. M. SMITH
4. The effect of attitude on free word association-time—A. G. EKDAHL
5. The localization of tactual space: A study of average and constant errors under different types of localization—L. E. COLE
6. The effects of gonadectomy, vasotomy, and injections of placental and orchic extracts on the sex behavior of the white rat—H. W. NISSEN

VOLUME 6—July-December, 1929

1. Learning and growth in identical infant twins: An experimental study by the method of co-twin control—A. GESELL AND H. THOMPSON
2. The age factor in animal learning: II. Rats on a multiple light discrimination box and a difficult maze—C. P. STONE
3. The acquisition and interference of motor habits in young children—E. MCGINNIS
4. A vocational and socio-educational survey of graduates and non-graduates of small high schools of New England—A. D. MUELLER
- 5 & 6. A study of the smiling and laughing of infants in the first year of life—R. W. WASHBURN

VOLUME 7—January-June, 1930

1. Tensions and emotional factors in reaction—E. DUFFY
2. Teacher influence on class achievement: A study of the relationship of estimated teaching ability to pupil achievement in reading and arithmetic—H. R. TAYLOR
- 3 & 4. A study of the effect of inverted retinal stimulation upon spatially coordinated behavior—P. H. EWERT
5. A study of the mental development of children with lesion in the central nervous system—E. E. LORD
6. An experimental study upon three hundred school children over a six-year period—N. D. M. HIRSCH

VOLUME 8—July-December, 1930

1. The amount and nature of activities of newborn infants under constant external stimulating conditions during the first ten days of life—O. C. IRWIN
2. Race and social differences in performance tests—S. D. PORTEUS, *et al.*
3. Language and growth: The relative efficacy of early and deferred vocabulary training, studied by the method of co-twin control—L. C. STRAYER
4. Eye-movements and optic nystagmus in early infancy—J. M. MCGINNIS
- 5 & 6. Reactions of kindergarten, first-, and second-grade children to constructive play materials—L. FARWELL

VOLUME 9—January-June, 1931

- 1 & 2. The status of the first-born with special reference to intelligence—H. H. HSIAO
- 3 & 4. An experimental study of bright, average, and dull children at the four-year mental level—H. P. DAVIDSON
5. An historical, critical, and experimental study of the Seashore-Kwalwasser test battery—P. R. FARNSWORTH
6. A comparison of difficulty and improvement in the learning of bright and dull children in reproducing a descriptive selection—F. T. WILSON

VOLUME 10—July-December, 1931

1. A comparative study of a group of southern white and negro infants—M. B. MCGRAW
- 2 & 3. An experimental study of prehension in infants by means of systematic cinema records—H. M. HALVERSON
4. The limits of learning ability in kittens—A. M. SHUEY
- 5 & 6. The effect of habit interference upon performance in maze learning—O. W. ALM

VOLUME 11—January-June, 1932

1. General factors in transfer of training in the white rat—T. A. JACKSON
2. The effect of color on visual apprehension and perception—M. A. TINKER
3. The reliability and validity of maze experiments with white rats—R. LEEPER
4. A critical study of two lists of best books for children—F. K. SHUTTLEWORTH
- 5 & 6. Measuring human energy cost in industry: A general guide to the literature—R. M. PAGE

VOLUME 12—July-December, 1932

1. Family resemblances in verbal and numerical abilities—H. D. CARTER
2. The development of fine prehension in infancy—B. M. CASTNER
- 3 & 4. The growth of adaptive behavior in infants: An experimental study at seven age levels—H. M. RICHARDSON
- 5 & 6. Differential reactions to taste and temperature stimuli in newborn infants—K. JENSEN

VOLUME 13—January-June, 1933

1. A critique of sublimation in males: A study of forty superior single men—W. S. TAYLOR
2. The growth and decline of intelligence: A study of a homogeneous group between the ages of ten and sixty—H. E. JONES AND H. S. CONRAD
3. The relation between the complexity of the habit to be acquired and the form of the learning curve in young children—M. L. MATTSON
4. Eating habits in relation to personality development of two- and three-year-old children: A study of sixty-nine children in two nursery schools—A. A. ELIOT
5. Coordinating mechanisms of the spinal cord—O. C. INGEBRITSEN

Genetic Psychology Monographs (continued)

VOLUME 14—July-December, 1933

1. Mental growth during the first three years: A developmental study of sixty-one children by repeated tests—N. BAYLEY
2. A study of triplets: including theories of their possible genetic relationships—F. N. ANDERSON AND N. V. SCHEIDEMANN
3. The objective measurement of emotional reactions—H. V. GASKILL
4. Development of behavior in the fetal cat—J. D. CORONIOS
5. A study of certain language developments of children in grades four to twelve, inclusive—L. L. LABRANT
6. The effect of early and delayed practice on memory and motor performances studied by the method of co-twin control—J. R. HILGARD

VOLUME 15—January-June, 1934

1. Studies in the psychology of tone and music—P. R. FARNSWORTH
2. Motor learning of children in equilibrium in relation to nutrition—E. L. BEEBE
3. Discrimination limits of pattern and size in the goldfish *Carassius auratus*—J. B. ROWLEY
4. Limits of learning ability in the white rat and the guinea pig—B. F. RIESS
- 5 & 6. The limits of learning ability in rhesus monkeys—H. A. FJELD

VOLUME 16—July-December, 1934

1. A statistical study of ratings on the California Behavior Inventory for Nursery-School Children—H. S. CONRAD
2. An eye-movement study of objective examination questions—A. FRANDSEN
3. An experimental study of constitutional types—O. KLINEBERG, S. E. ASCH, AND H. BLOCK
4. The development of a battery of objective group tests of manual laterality, with the results of their application to 1300 children—W. N. DUROST
- 5 & 6. An experimental study in the prenatal guinea-pig of the origin and development of reflexes and patterns of behavior in relation to the stimulation of specific receptor areas during the period of active fetal life—L. CARMICHAEL

VOLUME 17—January-December, 1935

1. Organization of behavior in the albino rat—R. L. THORNDIKE
2. Brightness discrimination in the rhesus monkey—M. P. CRAWFORD
3. The limits of learning ability in cebus monkeys—A. M. KOCH
4. Nature-nurture and intelligence—A. M. LEAHY
5. On intelligence of epileptic children—E. B. SULLIVAN AND L. GAHAGAN
6. A study of the play of children of preschool age by an unobserved observer—D. L. COCKRELL

VOLUME 18—January-December, 1936

1. Sex differences in variational tendency—Q. MCNEMAR AND L. M. TERMAN
2. The process of learning to dress among nursery-school children—C. B. KEY, M. R. WHITE, M. P. HÖNZIK, A. B. HEINEY, AND D. ERWIN
3. A study of the present social status of a group of adults, who, when they were in elementary schools, were classified as mentally deficient—W. R. BALLER
4. The influence of specific experience upon mental organizations—A. ANASTASI
- 5 & 6. Studies in aggressiveness—L. BENDER, S. KEISER, AND P. SCHILDER

VOLUME 19—January-December, 1937

1. Psychological bases of self-mutilation—C. DABROWSKI
2. Masculine temperament and secondary sex characteristics: A study of the relationship between psychological and physical measures of masculinity—H. GILKINSON
3. A psychological study of forty unmarried mothers—R. D. NOTTINGHAM
4. Behavior problems in the children of psychotic and criminal parents—L. BENDER
5. Domination and integration in the social behavior of young children in an experimental play situation—H. H. ANDERSON
6. The sequential patterning of prone progression in the human infant—L. B. AMES

VOLUME 20—January-December, 1938

1. The relationship between characteristics of personality and physique in adolescents—P. S. DE Q. CABOT
2. Behavior problems of elementary school children: A descriptive and comparative study—I. Y. MASTEN
3. Graphic representation of a man by four-year-old children in nine prescribed drawing situations—P. F. GRIDLEY
4. Differences between two groups of adult criminals—R. S. TOLMAN
5. A comparative study by means of the Rorschach method of personality development in twenty pairs of identical twins—E. TROUP
6. Individual differences in the facial expressive behavior of preschool children: A study by the time-sampling method—C. SWAN

VOLUME 21—January-December, 1939

1. An experimental analysis of "level of aspiration"—R. GOULD
2. Some light on the problem of bilingualism as found from a study of the progress in mastery of English among preschool children of non-American ancestry in Hawaii—M. E. SMITH
3. Domination and social integration in the behavior of kindergarten children and teachers—H. H. ANDERSON
4. The capacity of the rhesus and cebus monkey and the gibbon to acquire differential response to complex visual stimuli—W. E. GALT
5. The social-sex development of children—E. H. CAMPBELL

VOLUME 22—January-December, 1940

1. Measuring human relations: An introduction to the study of the interaction of individuals—E. D. CHAPPLE
2. Aggressive behavior in young children and children's attitudes toward aggression—M. D. FITE
3. Student attitudes toward religion—E. NELSON
4. The prediction of the outcome-on-furlough of dementia praecox patients—J. S. JACOB
5. Significant characteristics of preschool children as located in the Conrad inventory—K. H. READ
6. Learning by children at noon-meal in a nursery school: Ten "good" eaters and ten "poor" eaters—J. B. MCCAY, E. B. WARING, AND P. J. KRUSE

VOLUME 23—January-June, 1941

1. Studies in the interpretation of play: I. Clinical observation of play disruption in young children—E. H. ERIKSON
2. An analysis of certain variables in a developmental study of language—F. M. YOUNG
3. Infant development under conditions of restricted practice and of minimum social stimulation—W. DENNIS
4. An analysis of the mental factors of various age groups from nine to sixty—B. BALINSKY
5. Factors influencing performance on group and individual tests of intelligence: I. Rate of work—M. W. BENNETT
6. Individual differences in apperceptive reaction: A study of the response of preschool children to pictures—E. W. AMEN

VOLUME 24—July-December, 1941

1. Twins T and C from infancy to adolescence: A biogenetic study of individual differences by the method of co-twin control—A. GESELL AND H. THOMPSON
2. Finger nail-biting: Its incipency, incidence, and amelioration—A. L. BILLIG
3. An experimental study of the factors of maturation and practice in the behavioral development of the embryo of the frog, *Rana pipiens*—A. FROMME
4. The Fels child behavior scales—T. W. RICHARDS AND M. P. SIMONS
5. Measurement of the size of general English vocabulary through the elementary grades and high school—M. K. SMITH
6. Stereotypes in the field of musical eminence—P. R. FARNSWORTH

VOLUME 25—January-June, 1942

1. A genetic study of geometrical-optical illusions—A. WALTERS
2. Interpretation of behavior-ratings in terms of favorable and unfavorable deviations: A study of scores from the Read-Conrad Behavior Inventory—K. H. READ AND H. S. CONRAD
3. Are there any innate behavior tendencies?—J. B. SCHOOLLAND
4. An investigation of the intelligibility of the speech of the deaf—C. V. HUDGINS AND F. C. NUMBERS

Genetic Psychology Monographs (continued)

VOLUME 26—July-December, 1942

1. The critical frequency limen for visual flicker in children between the ages of 6 and 18—V. L. MILLER
Some factors determining handedness in the white rat—K. L. WENTWORTH
2. Motivation and behavior—E. FRENKEL-BRUNSWIK

VOLUME 27—January-June, 1943

1. Comparison of children's personality traits, attitudes, and intelligence with parental occupation—N. R. MADDY
2. A comparative study of mental functioning patterns of problem and non-problem children seven, eight, and nine years of age—M. L. PIGNATELLI

VOLUME 28—July-December, 1943

1. Separation anxiety in young children: A study of hospital cases—H. EDELSTON
2. Correlates of vocational preferences—W. A. BRADLEY, JR.

VOLUME 29—January-June, 1944

1. Mental changes after bilateral prefrontal lobotomy—S. D. PORTEUS AND R. D. KEPNER
2. A twin-controlled experiment on the learning of auxiliary languages—B. PRICE, W. J. KOSTIR, AND W. M. TAYLOR

VOLUME 30—July-December, 1944

1. A method of administering and evaluating the thematic appreciation test in group situations—R. M. CLARK
2. A study of anxiety reactions in young children by means of a projective technique—R. TEMPLE AND E. W. AMEN

VOLUME 31—January-June, 1945

1. The evolution of intelligent behavior in rhesus monkeys—B. WEINSTEIN
2. Perceptual behavior of brain-injured, mentally defective children: An experimental study by means of the Rorschach technique—H. WERNER

VOLUME 32—July-December, 1945

1. A clinical study of sentiments: I.—H. A. MURRAY AND C. D. MORGAN
2. A clinical study of sentiments: II.—H. A. MURRAY AND C. D. MORGAN

VOLUME 33—January-June, 1946

1. Interpretation of spontaneous drawings and paintings—T. S. WAERNER
2. Preferences for sex symbols and their personality correlates—K. FRANCK
- AND W. L. WOODS

VOLUME 34—July-December, 1946

1. The relation of emotional adjustment to intellectual function—J. L. DESPERT AND H. O. PIERCE
2. The smiling response: A contribution to the ontogenesis of social relations—R. A. SPITZ

VOLUME 35—January-June, 1947

1. The thematic apperception technique in the study of culture-personality relations—W. E. HENRY
2. A continuation study of anxiety reactions in young children by means of a projective technique—M. DORKEY AND E. W. AMEN

VOLUME 36—July-December, 1947

1. Maze test validation and psychosurgery—S. D. PORTEUS AND H. N. PETERS
2. The diagnostic implications of Rorschach's test in case studies of mental defectives—I. JOLLES

VOLUME 37—January-June, 1948

1. The radio day time serial: A symbolic analysis—W. L. WARNER AND W. E. HENRY
2. The relation of personality characteristics and response to verbal approval in a learning task—G. L. GRACE
2. The mechanism of vision: XVIII. Effects of destroying the visual "associative areas" of the monkey—K. S. LASHLEY
- A study of the relationship between handwriting and personality variables—P. CASTELNUOVA-TEDESCO

VOLUME 38—July-December, 1948

1. Modern language learning: The intensive course as sponsored by the United States Army, and implications for the undergraduate course of study—M. LIND
- Conflict: A study of some interactions between appetite and aversion in the white rat—M. A. TOLCOTT
2. Schizophrenia and the MAPS test: A study of certain formal psycho-social aspects of fantasy production in schizophrenia as revealed by performance on the Make a Picture Story (MAPS) Test—E. S. SHNEIDMAN
- A study of the transmission of authority patterns in the family—H. L. INGERSOLL

VOLUME 39—January-June, 1949

1. The assessment of parental attitudes in relation to child adjustment—E. J. SHOBEN, JR.
2. Qualitative differences in the vocabulary responses of normals and abnormals—H. FEIFEL
- The relative effectiveness of motion and still pictures as stimuli for eliciting fantasy stories about adolescent-parent relationships—P. E. EISENER
- The organization of hereditary maze-brightness and maze-dullness—L. V. SEARLE

VOLUME 40—July-December, 1949

1. An experimental study of what young school children expect from their teachers—B. BIBER AND C. LEWIS
- A study of the relative effects of age and of test difficulty upon factor patterns—H. A. CURTIS
2. Effects of sex role and social status on the early adolescent personality—E. MILNER
- Social perceptions and attitudes of children—M. RADKE, H. TRAGER, AND H. DAVIS

VOLUME 41—January-June, 1950

1. Some psychological and educational aspects of pediatric practice: A study of well-baby clinics—L. H. BLUM
- One-trial learning in the domestic rat—B. B. HUDSON
2. Awareness of racial differences by preschool children in Hawaii—D. V. SPRINGER
- An introduction to the principles of scientific psychoanalysis—A. ELLIS
- Age trends in children's evaluation of teacher-approved and teacher-disapproved behavior—S. L. WITRYOL
- The relationship between level of vocational aspiration and certain personal data: A study of some traits and influences bearing on the prestige level of vocational choice—J. STUBBINS

VOLUME 42—July-December, 1950

1. Personality patterns of suicidal mental hospital patients—N. L. FARBEROW
- Sex-role identification in young children in two diverse social groups—M. RABAN
2. A study of the influence of the social field on individual behavior: As revealed in the expression of hostility and warmth by neurotics and paranoid schizophrenics in discussion group situations—D. SHAPIRO
- An experimental study of avoidance—R. F. HEFFERLINE

VOLUME 43—January-June, 1951

1. A study of copying ability in children—E. A. TOWNSEND
- Prestige motivation of gifted children—D. P. AUSUBEL
2. A psychological study of physical scientists—A. ROE

VOLUME 44—July-December, 1951

1. The organization of hostility controls in various personality structures—S. FISHER AND E. HINDS
- Children and radio: A study of listeners and non-listeners to various types of radio programs in terms of selectability, attitude, and behavior measures—E. A. RICCIUTI
2. Quantitative expression in young children—W. E. MARTIN
- The use of magnetic devices in the collection and analysis of the preverbal utterances of an infant—A. W. LYNIP

VOLUME 45—January-June, 1952

1. Japanese-American personality and acculturation—W. CAUDILL
2. A statistical study of the Freudian theory of levels of psychosexual development—C. A. BARNES
- Personality characteristics of selected disability groups—D. N. WIENER

Genetic Psychology Monographs (continued)

VOLUME 46—July-December, 1952

1. The relationship of social status, intelligence, and sex of ten- and eleven-year-old children to an awareness of poverty—F. J. ESTVAN
2. An empirical study of the castration and Oedipus complexes—S. M. FRIEDMAN
3. The relationship between projective test scoring categories and activity preferences—M. M. SCHWARTZ
4. A comparison of formal and content factors in the diagnostic testing of schizophrenia—M. SHERMAN

VOLUME 47—January-June, 1953

1. Ability and accomplishment of persons earlier judged mentally deficient—D. C. CHARLES
2. Variations in the consistency of the behavioral meaning of personality test scores—M. KÖRNREICH
3. Some child-rearing antecedents of aggression and dependency in young children—R. R. SEARS, *et al.*
4. Symptom correlates for descriptive diagnosis—J. R. WITTENBORN, *et al.*

VOLUME 48—July-December, 1953

1. Age and mental abilities: A longitudinal study—W. A. OWENS, JR.
2. The development of a personality questionnaire for drinkers—P. J. HAMPTON
3. Personality and physical disease: A test of the Dunbar hypothesis applied to diabetes mellitus and rheumatic fever—D. H. CROWELL
4. Socio-economic contrasts in children's peer culture prestige values—B. POPE
5. A critical review of the stability of social acceptability scores obtained with the partial-rank-order and the paired-comparison scales—S. A. WITRYOL AND G. G. THOMPSON
6. A study of the effects of color on Rorschach responses—G. G. BRODY

VOLUME 49—January-June, 1954

1. Factors underlying major reading disabilities at the college level—J. A. HOLMES
2. Parent behavior toward first and second children—J. K. LASKO
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LEARNING TO CLASSIFY BY COLOR AND BY CLASS:
A STUDY OF CONCEPT DISCOVERY
WITHIN COLOMBIA, SOUTH AMERICA*¹

University of Massachusetts

JUDITH LEWIS EVANS

SUMMARY

In a cross-cultural study of classification behavior the Evans-Segall Concept Discovery Task was administered to 331 Colombian boys and girls. The study was designed to ascertain the ease with which perceptual and abstract bases for equivalence could be utilized by individuals from different age, school, and degree of urbanization groups within Colombia, South America. Children in grades one, three, and five were tested in schools representing different degrees of urbanization and social class.

The results clearly indicate that for the population sampled in Colombia the classification process follows the developmental stages indicated by research in other cultures. School-going children use perceptual cues (e.g., color) as the basis of equivalency grouping without difficulty, and the ease with which they are able to use the abstract class criteria is dependent upon their grade in school (rather than age) and, to some extent, whether the child lives in an urban or more rural environment. In addition, the results indicate that the experiential factors associated with school attendance play a significant role in children's ability to utilize the abstract class groups as employed in the task.

A. INTRODUCTION

People operate in an increasingly complex world of objects, events, and ideas. Yet, within the same cultural groups they are able to communicate with one another. This communication is possible because man has organized the world into commonly defined concepts or equivalence groups, concepts which acquire meaning throughout an individual's lifetime. Peace, democracy, brotherhood—these concepts have little meaning to the neonate. Because of the nature of the

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young child's thought processes, abstract concepts are not understood. In fact, the world of the infant is limited to what is in the immediate environment. During his early years the child becomes aware of a world external to his existence. In coming to understand this world and to gain control over it, he learns a series of labels which he uses to communicate with others. A part of the process by which he learns to use the correct label depends on his ability to see relationships between objects, events, and ideas and to classify them into like groups or concepts. A label may define a specific object—my blue car—or it may indicate a class of objects—vehicles—or an abstract concept—transportation.

Educational psychologists have been attempting to understand the variables which are a part of the classification process. It appears that the criteria used to create equivalence groups vary depending on the groups being sampled. For example, a given individual may rely heavily on perceptual cues—color, form, or size—to differentiate objects from one another and to integrate them into groups. Another individual may create groups on the basis of characteristics inherent to the objects. Examples of such characteristics would be what they are made of (wood, metal, cloth), how they are commonly used (toys, tools, utensils), or their common biological definition (birds, fish). The question being asked by researchers is this: What variables affect the way in which people choose to create equivalence groups?

Some answers to this question have been provided through three contemporary theoretical constructs defined in the works of Piaget, Bruner, and Sigel and their associates. Inhelder and Piaget (5) have explored the development of classification skills and suggest that there are a series of universal sequential stages which characterize a child's organization of his world.

As compared to Inhelder and Piaget, Bruner and his associates (2) spend less time delineating specific stages and put more emphasis on discovering the variables that have an effect on classification behavior.

A third emphasis in the study of classification behavior is provided by Irving Sigel (9, 10, 11, 12, 13), who has looked at individual preferences on concept sorting tasks rather than being concerned with developmental levels.

What emerges from these three perspectives is an agreement on the relative use of two types of criteria: the perceptual and the abstract. The use of perceptual criteria is more common in young children; older children are able to employ more abstract criteria. Perceptual is defined as the attention to external, physical properties of the object—color and form being the predominant exemplars. Abstract categorization, on the other hand, refers to the ability to identify an object as an independent instance of a class

label. Sorting in this instance is based on inherent criteria rather than superficial external traits.

Since these findings are based primarily on Euro-American samples, to what extent can the case be made that a universal theory of classification explains the developmental usage of perceptual before abstract criteria as a basis of equivalence grouping? To answer this question, cross-cultural studies of equivalence grouping have been done in several settings.

For example, in two studies on equivalence grouping, African children were compared on their use of two perceptual dimensions—color and form (8, 14). The results of these studies suggest the high salience of color over form as a perceptual basis for equivalence grouping. In neither study were age trends nor schooling effects found.

Two studies done in West Africa employed stimuli in which perceptual and abstract criteria were possible bases for sorting. Price-Williams (7) found that age was a predictor of the relative use of the two criteria, with the abstract criteria being employed more frequently by older children. Greenfield (4), working in Senegal, found that schooling was a significant factor in whether or not children of various ages used color or class criteria for sorting. Her results indicated that rural, unschooled children relied on color regardless of their age. However, with school experience, the children tended to use other types of sorting.

The point on which the four studies in Africa agree is that color is more likely to be chosen as the basis for sorting than form when only perceptual criteria are available. In the two studies where abstract criteria were a possible basis for sorting, its relative use was to some extent affected by age, degree of urbanization, and schooling.

Free-sort tasks were employed in the studies cited, tasks which give the child an opportunity to *choose* a response from among a group of stimuli. Such a choice situation may well reveal a child's *preference* in a sorting situation, but may not, in fact, tap the child's ability to use various criteria for equivalence grouping. For this reason the author and Marshall Segall designed a learning task (The Evans-Segall Concept Discovery Task) to ascertain the ease with which children could learn to use color (perceptual) and class (abstract) criteria for equivalence grouping.

The instrument was developed and administered in Uganda, East Africa, to a sample representing three degrees of urbanization (urban, semiurban, and rural) and three grades (first, third, and fifth). The instrument was also administered to unschooled children and adults with varying levels of education.

The results indicated that while sorting on perceptual criteria was learned with equal ease by all groups of Ss, learning to sort by means of an abstract framework was easy only for the oldest schooled group sampled. Also, both tasks were more difficult for rural children than for urban children, and unschooled children and adults with minimal school experience did as poorly on the class aspect of the task as the children in the lower school grades (3).

The variables studied in Africa (age, degree of urbanization, schooling *vs.* nonschooling) may have a greater or lesser effect on concept learning in cultural groups on other continents. Within Latin America, Mexico appears to be the only country in which equivalence grouping tasks have been employed. A study designed to compare the results of classification behavior across cultures was conducted by Asch and Zimiles (1), who found that children from high and low socioeconomic groups in New York City performed better than either of these socioeconomic groups in Mexico.

Another study in Mexico was more comprehensive. Maccoby and Modiano (6) presented a classification task to rural and urban Mexican children in two age groups (8-10 years and 12-13 years). The results indicated that rural children showed a significant decrease in the use of perceptual bases and a marked increase in the use of more abstract criteria over time.

All studies described above essentially support the view that experiential variables associated with school attendance and living environment, along with maturation, are critical in the development of conceptual equivalence involving certain types of abstract stimulus attributes. For the purpose of further understanding the development of equivalence grouping within different cultural settings, the Evans-Segall Concept Discovery Task was administered in Columbia, South America, to explore the following specific questions:

1. Is it generally easier for children to learn perceptual criteria for sorting than it is to learn to sort by means of abstract categories? If children in Colombia perform like the children in Uganda, it would provide further evidence that it is realistic to propose a universal theory of classification development. Since the African data indicate that it is easier for children ages 4-7 who attend school to employ perceptual criteria, with older school-going children (ages 9-13) utilizing abstract criteria with ease, the Colombian data would need to indicate the same pattern in order to support a universal theory of classification development.

2. Is the ease of learning either of the tasks related to age? Of most interest here is a possible interaction between task and age; for example, one task may be more easily learned than the other at a particular age. That difference might be diminished, eliminated, or reversed at higher ages.

3. Does the child's environment (urban, semiurban or rural) have an effect on his ability to learn the task?

B. METHOD

1. *Subjects*

A total of 331 Spanish-speaking children from Colombia were included in the main sample. Since the study was designed as a replication of the study completed in Uganda, an attempt was made to utilize the same dimensions in Uganda and Colombia in selecting a sample. Thus, as in Uganda, sampling in Colombia was done in three different locations representing different levels of urbanization: urban, semiurban, and rural. In Africa the urban city selected was Kampala, a city which serves as the hub or support center for the other two areas sampled. This relationship was replicated when choosing the areas in Colombia. Jamundi, the semiurban area, and Pance and Villacarmelo, the rural settings, are all within the sphere of influence of Cali.

One difference between the sampling in Colombia and Africa occurred within the urban area. At the time of sampling in Uganda, children from all social classes attended public schools together. Thus a random sampling within a public school included children from different socioeconomic levels. Quite a different situation exists in Cali where it is rare for an upper-class child to attend a public school. Thus, to sample only from a public school would be to leave unsampled a large percentage of the primary school population. For this reason children were sampled from two distinct socioeconomic strata within Cali: upper-class private school children and lower-middle-class public school children. Also, with few exceptions, public and private schools within Cali and Jamundi, the semiurban area, are segregated by sex. Therefore, two schools were used in each of these locations to obtain a sample of boys and girls. In the rural areas the schools are coeducational, but two areas were sampled in order to obtain enough children.

2. *Task*

The task was essentially one of concept-discovery and learning, with two variations. In one instance objects were equivalent, based on a perceptual criterion, and in another they were related abstractly. The perceptual criterion was represented through color, and the abstract by class groups which required that an individual relate objects on other than functional or perceptual criteria.

The child was required to "discover" the criterion in the sense that he was asked to indicate which two were alike from among four pictured objects.

After he responded, he was told whether or not he was correct. If so, he had, in a sense, discovered the appropriate criterion. He then had to employ that criterion successfully in subsequent trials which meant that he was involved in a learning task. Also of interest was how readily the child was able to shift from using one criterion to another, since the child was asked to learn to utilize both the perceptual and the abstract basis for equivalency.

Half of the subjects had to discover color as the basis for likeness first and, then, on the second run through the 20 sets of pictures, had to identify abstract class relationships. The other half of the sample performed the two tasks in the reverse order; assignment to the two sequences was random.

3. *Materials*

Twenty sets of four pictured objects were hand drawn and colored, on the basis of the stimuli used in Uganda. In each set two objects were of the same color with one of these objects related to a third on the basis of an abstract classification. The fourth card in the set was not related to any of the other cards. For example, Set I was composed of a cup, book, bottle and clock; the cup and book were both blue, thus providing a color match, while the cup and bottle were related in terms of both being containers. The clock was not equivalent to any of the other objects pictured. In choosing the four objects an attempt was made to minimize any possible matches other than the dominant one desired.

The order of presentation of the sets, and hence of the characteristics which served as signs of equivalence, were randomly determined and then fixed for the entire experiment. Also, within each set the objects were presented in the same order to all subjects. Thus for Set I, beginning from left to right each child saw the cup (*a*), the book (*b*), the bottle (*c*), and the clock (*d*). The four stimuli within each set were arranged so that objects in every position (*a*, *b*, *c*, and *d*) would equally often be involved in a match. So while in Set I color equivalence was found by specifying card *a* and *b*, in Set II, *c* and *d* were color matched. For class, Set I utilized cards *a* and *c*, while in Set II *b* and *d* contained the correct objects for class groupings.

In transferring the task from Africa to South America it was found that only a few of the items had to be changed. The availability of the object and its frequency of use were used as criteria for selecting items to replace those used with African children. In all sets of cards the original colors were maintained, and the class groups remained constant although the exemplars of the class may have been modified.

4. Procedure

Each child was tested individually in his own language with only the child and examiner present. The subject was told that he was going to be shown a set of four pictures and that he was to find two of them which were alike. As each set of four was spread before him the *S* was asked to name each pictured object. If he could not name the object, he was told what it was. This was to insure that the child knew what the objects were before he performed the task.

After naming the object the *S* was told, "Put together two which are alike." He responded either by piling two together, pointing to two, or verbally indicating his choices. A child assigned to the Color-Class sequence was told that he was correct if he selected two objects of the same color when the cards were presented in the first half of the task.

After reaching the end of the first half of the task the child was told, "You have done well. Now I am going to show you the same pictures again. This time I want you to put them together in another way." The child began the second half of the task with Set I and was reinforced verbally for making a sort on the basis of class if he had been reinforced for color the first time through the cards.

This was reversed for the children in the Class/Color treatment groups. Whenever a child made an incorrect choice, he was told which one was incorrect and given a second opportunity to make the correct match. He was again told if his response was correct or incorrect. In calculating the results, however, only correct first attempts were scored as correct trials. Children either completed 20 trials with one or the other matching rule in effect before beginning the second 20 trials, or they were moved to the second task after trial 15 if they had reached the criterion of four successive correct trials before or by trial 15.

In Table 1 are presented the number of subjects in each school, grade, and treatment group cell and the age distribution of the total sample.

C. RESULTS

Throughout the discussion of children's performance on the color and class sort, reference is made to "learning" the task. This means that the *S* reached criterion on the relevant sort; he sorted four consecutive sets of stimuli correctly on the first trial. Low scores indicate that it took the child fewer trials to reach criterion. Thus, the lower the score, the better. The minimum score is 4, the maximum 22. Although there were only 20 sets of cards included in the task, children who made correct responses on trials 19 and 20 were

TABLE 1
AGE DATA (IN MONTHS) FOR COLOMBIAN SUBJECTS BY SCHOOL, GRADE, AND ORDER OF PRESENTATION

Grades	Urban						Semiurban			Rural		Total grade
	Upper-class			Lower-class			Semiurban			Rural		
	Co/Cl	Cl/Co	Co/Cl	Co/Cl	Cl/Co	Cl/Co	Co/Cl	Cl/Co	Co/Cl	Cl/Co		
First												
N	13	13	18	16	18	18	18	18	8	8	8	112
\bar{X}	75.54	79.85	92.89	92.87	99.33	97.72	98.75	97.75	97.75	97.75	91.84	91.84
SD	4.37	10.41	12.03	11.93	15.33	11.70	17.96	13.49	13.49	13.49	11.94	11.94
Third												
N	14	14	13	12	18	18	9	8	8	8	106	106
\bar{X}	103.5	103.57	121.0	126.0	126.28	131.94	134.22	132.38	132.38	132.38	122.36	122.36
SD	7.78	6.12	13.68	14.78	11.29	17.88	17.06	17.63	17.63	17.63	12.35	12.35
Fifth												
N	13	14	15	12	18	18	11	12	12	12	113	113
\bar{X}	137.85	131.50	142.0	143.42	147.89	150.94	162.09	154.08	154.08	154.08	146.22	146.22
SD	13.62	9.11	14.29	13.75	12.29	11.24	21.27	9.76	9.76	9.76	12.91	12.91
Total school												
N	81	86	108	56	129.88	16.02						
\bar{X}	105.30	119.70	125.68									
SD	8.54	12.58	13.29									

Note: Co/Cl = Color first, followed by class; Cl/Co = Class first, followed by color.

given two extra sets of pictures to see if they could reach criterion within 22 trials. Those who did received a score of 22. Those Ss who correctly identified the sort on trials 18, 19, and 20 were given one additional set and thus could receive a score of 21. If children did not achieve criterion, they were assigned a score of 22, the maximum score, and the ANOVAs, discussed below, were thus calculated with the use of all the Ss tested.

The results were analyzed with the use of an analysis of variance procedure. The main effects tested against the criterion scores were as follows: school location (urban upper-class, urban lower-class, semiurban, and rural); grade (1st, 3rd, and 5th); and treatment condition (color first followed by class, and class first followed by color—yielding a three-way analysis of variance ($4 \times 3 \times 2$)). The results of the ANOVA for color and class learning are presented separately and then summarized and compared.

1. *Color Learning*

In comparing scores in the learning of the color basis of equivalency, significant differences were found for the main effects of grade ($p < .001$) and order of presentation ($p < .001$). There was also a significant interaction between grade and order of presentation ($p < .01$), indicating that regardless of grade, color is learned with ease when it is presented first. However, when first graders are presented with class criterion first and then asked to choose another criterion for equivalence, the learning of the color criterion is difficult. Children in the higher grades have less trouble learning color when it comes second, although it is generally harder to learn it second than first. In comparing performance across schools the results indicate that school location on the urban/rural continuum does not play a significant role in children's learning of the color sort, regardless of whether color is the first or second criterion to be learned.

Thus, in terms of color learning, it was equally easy for the children sampled to learn the color criteria for equivalence grouping when it was first, regardless of grade or degree of urbanization as defined by the schools included. On the other hand, when color was presented second, grade tended to be a good predictor of mean number of trials to criterion, with those in higher grades reaching criterion in fewer trials.

2. *Class Learning*

As in the data on color learning, the main effects of grade and order of presentation are significant in the learning of the class criterion ($p < .001$ in both instances). The children in grade one had more difficulty with the task

than the third graders who, in turn, took more trials to reach criterion than the fifth graders. In terms of order of learning it was more difficult to learn the class task when it followed the learning of the color basis for equivalency; the class basis for equivalency was more easily learned when it was presented first. Data on color and class learning differed in that the location of the school was a variable which was related to how quickly the children were able to achieve criterion on the class task ($p < .05$); this was not true for color learning. Essentially this means that the class task was increasingly more difficult to learn, moving from the urban upper-class school setting to the rural school population sampled.

D. DISCUSSION

In comparing the data on color and class learning one thing is apparent: for the population sampled, the class sort is more difficult to learn than the color sort within the Evans-Segall Concept Discovery Task. Fewer children reached criterion on class and, for those who did, it generally took more trials than the learning of the color sort. In most instances class learning, even when it came first, was more difficult than the learning of color, regardless of whether color came first or second.

With reference to schools under the color/class treatment (when color was learned first) there was essentially no difference in number of trials to criterion for color sorting, although the school/grade groups represented different ages (see Table 1). When color was presented second, there were grade differences in the mean scores. When school location was considered irrespective of grade and treatment groups, differences were not significant; the lowest scores were found within the urban upper class and the rural schools, groups whose age composition determined the lowest and highest points, respectively, on the age continuum in the sample. Thus, it appears that grade is a better predictor of color scores under the class/color condition than either age or school location.

In terms of learning the class sort, there was a rural/urban difference in performance; on the average, rural children's scores were higher than those of the urban Ss when class was presented first. When class came second, performance was similar across schools. Essentially this means that it was difficult to learn class when it came second regardless of school location. The learning of class under the class/color condition, however, became increasingly easy for older children within the urban setting. For the semiurban and rural sample the task remained difficult regardless of order of presentation or age.

The data indicate that for class, as well as color, age was not a consistent predictor of performance. Clearly other variables existed within the environment of the children sampled—perhaps within the school, but more likely within the total environment—which interacted with age to affect performance on equivalence groupings as defined within the Evans-Segall Concept Discovery Task.

E. CONCLUSIONS

The Evans-Segall Task was designed to ascertain what children can do in terms of learning two very specific kinds of classification systems. Within that task a pattern of responses was elicited which suggest the following findings for the children sampled:

1. In terms of age: (a) Age did not correlate with performance. Regardless of the age of the children sampled, the color basis of equivalency was learned with relative ease, and (b) Age correlated to a somewhat higher degree with performance on the class learning task, but can be said to account for only a small percent of the variance.

2. In terms of grade, there were grade differences in performance on several aspects of the task: (a) The number of children who reached criterion on the color task when it was presented second, and how quickly they did so. (b) The number of children who reached criterion on the class task, regardless of whether it was presented first or second, and how quickly they did so.

3. In terms of urbanization: Differences along an urban/rural continuum were not evidenced in the results on color learning, but were apparent on class learning.

4. In terms of task: The order in which children were required to learn the two criteria affects the ease with which they reached criterion on the color and class basis for equivalency.

Clearly the findings of the Evans-Segall Task in both Colombia and Africa are very limited because of the fact that the task presupposes a system of thought consistent with Western man's organization of the world. What can be said is that the results indicate how a person is able to perform on a school-related task under the very artificial conditions of a testing situation.

However, if people are expected to operate in a Western society that uses the concepts as defined in the task, then it is of interest to know how well people relate to these concepts and how well they are able to use them. Once again, however, it must be emphasized that it is not the presence or absence of processes which is tapped in this type of cross-cultural testing, but the patterns of usage and the ability to manipulate the processes at a given time. The results

suggest that processes are fostered and reinforced within a given culture, and these will differ across cultures depending on the needs of the society in question.

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AN EMPIRICAL STUDY OF THEORIES OF ORGANIZATIONAL AND OCCUPATIONAL COMMITMENT*†

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SUMMARY

This study examines the theories on organizational and occupational commitment developed by Howard Becker and by Ritzer and Trice. The relationships between such commitments, and between these commitments and various background indicators of the number of side-bets, are examined in regard to system analysts in Israel. While the study gives little support to hypotheses based on Becker's theory, those based on Ritzer and Trice's theory are fully accepted.

A. INTRODUCTION

According to Howard Becker's side-bet theory, "Commitments come into being when a person, by making a side-bet, links extraneous interests with a consistent line of activity" (1, p. 32). Referring to commitment to occupation, Becker states: "If, for instance, a person refuses to change his job, even though the new job offers him a higher salary and better working conditions, we should suspect that his decision is the result of commitments, that other sets of rewards than income and working conditions have become attached to his present job so it would be too painful for him to change" (2, p. 50).

This theory was empirically tested by Ritzer and Trice (7, 8), who approached the relationship of occupational and organizational commitments among personnel managers. They derived scores of commitments from a series of questions in which personnel managers, members of the American association for Personnel Administration, were asked if, given specific incentives, they would change their companies (or occupations). Ritzer and Trice tested hypotheses concerning the relationship between commitment and various background factors (age, marital status, salary, etc.) which they considered indicators of the number of side-bets. Their results caused them to reject Becker's theory; alternatively, they suggest that rather than being a structural

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† This paper is based on a secondary analysis of data collected by M. Enoch for his Master's thesis at the Department of Labor Studies, Tel-Aviv University.

phenomenon, organizational and occupational commitment is a psychological phenomenon, based on the subjective meaningfulness of an occupation and an organization. Therefore, where an occupation is part bureaucratic and part professional (e.g., that of a personnel manager), a dual commitment—to both occupation and organization—is expected: "In order to make his work life really meaningful the personnel manager must supplement his commitment to the occupation with some degree of commitment to the organization" (8, p. 478).

The present study examines the theories of both Becker and Ritzer and Trice in regard to system analysts in Israel. System analysis (like personnel administration) is part bureaucratic and part professional; it lacks certain professional characteristics (3). The study employs most of Ritzer and Trice's variables for measuring the number of side-bets and the organizational and occupational commitments, but it differs in methodology.

The following hypotheses were tested:

1. There is a direct relationship between commitment to the organization and the following background variables: age, marital status, number of children, and salary. This hypothesis is based on Becker's theory. Ritzer and Trice explain why they selected these variables to test Becker's theory: (a) "The older one becomes, the more likely he is to have made a large number of side-bets, thereby increasing his commitment to the employing organization." (b) Marriage and children increase one's responsibilities and, therefore, make one less willing "to lose his investments in the employing organization." (c) Those with a higher salary have more to lose and therefore, would be less likely to leave their organizations" (8, pp. 476-477).
2. There is an inverse relationship between commitment to an organization and the following background variables: education, rate of intercompany change, and rate of geographical change.¹ This hypothesis is based on Becker's theory; its rationale has been suggested by Ritzer and Trice: (a) "The less education one has, the fewer the career alternatives open to him and, therefore, the greater the number of side-bets he must make in the organization employing him." (b) "Highly committed individuals are not likely to have been mobile" (8, p. 477).
3. There is a direct relationship between commitment to an occupation and the following background variables: education, planning (while in school) to be in system analysis, entry job in system analysis, and having a sponsor.²

¹ Ritzer and Trice also examined the rate of job change, but these data were not collected for the original study.

² Ritzer and Trice also examined majoring in the field of occupation or related fields, but these data were not collected for the original study.

This hypothesis is based on Becker's theory. According to Ritzer and Trice, the hypothesis, as far as education is concerned, may be based on Becker and Strauss's contention that "schooling occurs most conspicuously during the early stages of career and is an essential part of getting people committed to careers, and prepared to fill positions" (8, p. 477).

4. There is a positive correlation between organizational commitment and occupational commitment. This hypothesis is based on Ritzer and Trice's theory that where an occupation is part bureaucratic and part professional, there is a dual commitment to both occupation and organization.

5. Guttman's Smallest Space Analysis (SSA) separates the commitment and background variables. This hypothesis is based on Ritzer and Trice's theory that organizational and occupational commitment, rather than being a structural phenomenon, is a psychological phenomenon.

B. METHOD

1. Procedure

Our operational definition of occupational and organizational commitment is expressed in a mapping sentence, with three facets, presented in Figure 1.³

Our operational definition of commitment diverges from that of Ritzer and Trice, who constructed a scale of commitment based on a mixture of the amount of incentives and the degree of certainty of respondents. Our conceptual separation between the factors combined by Ritzer and Trice is important. We see no *a priori* way of ranking commitment according to these two factors. Which response, for example, should contribute more to the score on commitment to occupation: "I definitely would not change occupation if offered a slight increase in pay," or "I don't believe I would change occupation if offered a large increase in pay"? Also, it seems worthwhile to design the experiment so as not to presume a hierarchy of preferences concerning the *amount* of incentive. Thus, we allow for response combinations such as "I definitely would change my place of work if offered a *slight* increase in pay elsewhere" and "I definitely wouldn't change it if offered a *large* increase in pay."

We selected only two incentives: (a) pay, which we consider the most extrinsic incentive; and (b) opportunity to develop self, which we consider the most intrinsic incentive.⁴ Thus, instead of two commitment scores, we

³ For an exposition of facet theory, see Guttman (4, 5).

⁴ Other incentives included in Ritzer and Trice's score were freedom, status, and responsibility.

The degree to which system analyst (x) is inclined to remain in his

facet A. FRAMEWORK

facet B. AMOUNT OF INCENTIVE

(1.organization)		(1.small)
()	even if he were	() increase
()	offered a	() in his
(2.occupation)		(2.large)

facet C. TYPE OF INCENTIVE

(1.opportunity to develop self)		(1.low)	commitment
()	→	()	to framework
(2.pay)		(2.high)	specified

FIGURE 1

A MAPPING SENTENCE FOR OCCUPATIONAL AND ORGANIZATIONAL COMMITMENT

prefer to examine eight commitment variables based on the combinations of elements from each of the three facets of the mapping sentence.⁵

2. Subjects

The empirical data were collected through a survey conducted among the members of the Israeli Association of System Analysts. Questionnaires were sent to 276 system analysts, comprising a 50% random sample of the members listed by the Association. The questionnaire was sent along with a cover letter from the Association. After a telephone follow-up, 228 questionnaires were returned directly to the researchers.

Some of the questions correspond to the above eight variables. Example: "Would you change your organization if you were offered a job exactly like your present one, but with much higher pay, elsewhere?" The response alterna-

⁵ Requests for the full list of commitment and background variables and the matrix of correlation coefficients should be sent to the second author at Department of Labor Studies, Tel-Aviv University, Tel-Aviv, Israel.

tives were: "I definitely would change," "I possibly would change," "I don't believe I would change," and "I definitely wouldn't change."

The rest of the questions concern background variables: age, education, marital status, number of children, salary, rate of intercompany change, geographical mobility, entry job, etc.

3. Design

The first four hypotheses were tested by calculating the Spearman Rank Correlation Coefficient.⁶ A hypothesis was accepted if the related coefficients of correlation were in the predicted direction and statistically significant at the .05 level.

The multiple interaction among all the variables (hypothesis 5) is shown by Guttman's Smallest Space Analysis (4). SSA facilitates, by means of a computer program (6) a mapping of all the variables as points on a Euclidean space of preassigned dimensionality, while preserving (as nearly as possible) the following condition: for a given similarity coefficient between two variables, the larger the coefficient, the smaller is the distance between the corresponding two points on the map.

C. RESULTS

1. Hypothesis 1

Age was positively, but only slightly and not significantly, correlated with commitment to the organization, measured by little more opportunity to develop self ($r = .18$, $\alpha = .001$) and much more opportunity to develop self ($r = .11$, $\alpha = .05$).

The correlations of marital status with the commitment variables were in the predicted direction, but very low and not significant. The correlations of number of children with the commitment variables were in the predicted direction, but were not significant—except with little more opportunity to develop self ($r = .17$, $\alpha = .01$). Salary, on the other hand, was positively—though only slightly and not significantly—correlated with large increase in pay ($r = .22$, $\alpha = .001$) and with both little and much more opportunity to develop self ($r = .23$, $\alpha = .001$). Thus hypothesis 1 was partly accepted.

2. Hypothesis 2

All correlations regarding this hypothesis were very weak and not significant. While the correlations of intercompany change (except the correlation with

⁶ The coefficient is calculated as follows: $r = (\Sigma x_i^2 + \Sigma y_i^2 - \Sigma d_i^2) / 2\sqrt{\Sigma x_i^2 \Sigma y_i^2}$. The range of the coefficient is from -1.00 to $+1.00$. See Siegel (9).

much more opportunity to develop self) were in the predicted direction, those of education were not in the predicted direction. The correlations of geographical change were in the predicted direction only with opportunity to develop self. Hypothesis 2 is therefore rejected.

3. *Hypothesis 3*

The correlation of education with a slight increase in pay was negative ($r = .14$, $\alpha = .03$). The rest of the correlations between education and the commitment variables were also negative, but weaker and not significant. The correlations of planning while in school were all weak and not significant; they were also negative (except for the correlation with much more opportunity to develop self). Entry job in system analysis was positively correlated with much more opportunity to develop self ($r = .16$, $\alpha = .001$); its correlations with the other commitment variables were negative, weaker and not significant. The correlations of having a sponsor were all weak and not significant. Thus hypothesis 3 was partly accepted.

4. *Hypothesis 4*

The correlations were all positive and significant: slight increase in pay ($r = .31$, $\alpha = .001$); large increase in pay ($r = .17$, $\alpha = .01$); little more opportunity to develop self ($r = .48$, $\alpha = .001$); much more opportunity to develop self ($r = .27$; $\alpha = .001$). Thus this hypothesis is completely accepted.

5. *Hypothesis 5*

The SSA map (Figure 2) validates the expected distribution: the background variables are clearly separated from the commitment variables. The map gives sound support to Ritzer and Trice's theory.

D. CONCLUSIONS

While the hypotheses based on Becker's theory gain little support, the hypotheses based on Ritzer and Trice's theory are fully accepted.

Commitment to the organization, measured by much more opportunity to develop self was positively correlated only with age and salary. Salary was positively correlated with large increase in pay. On the other hand, the sole indicator of high occupational commitment was entry job, which was positively correlated with both much more opportunity to develop self and large increase in pay. It should be noted that age and entry job were not found to be significant in Ritzer and Trice's study; on the other hand, rate of intercompany change was not found to be significant in this study.

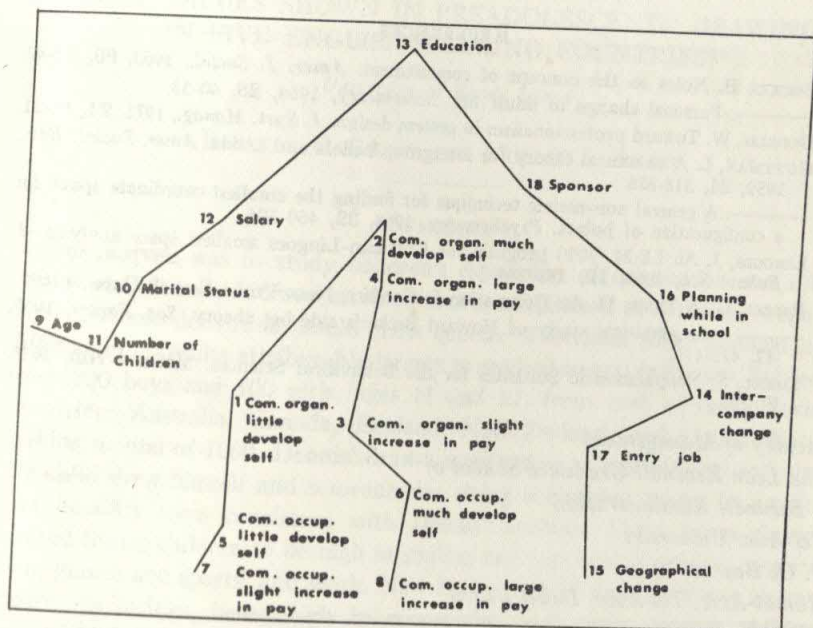


FIGURE 2
SSA MAP OF COMMITMENT AND BACKGROUND VARIABLES

Coefficient of alienation: .24.

Organizational commitment was in a highly positive correlation with occupational commitment. Also, the multiple interaction, as expressed by Smallest Space Analysis, separated commitment and background indicators of the number of side-bets. These results support Ritzer and Trice's theory that organizational and occupational commitment is a psychological phenomenon; and that where an occupation is partly bureaucratic and partly professional, there is a dual commitment to both occupation and organization.

Finally, it should be reemphasized that the study reported here has been conducted among members of one occupation only, and within the cultural circumstances of Israel. However, the similarity of our results to those obtained by Ritzer and Trice with regard to the members of another occupation—personnel managers in the U.S.—indicates a broader validity of Ritzer and Trice's theory and casts further doubts on Becker's theory. Further investigations in other occupations and countries may provide additional insight into the relative explanatory value of these two theories of commitments.

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GROUP VALUES SHOWN IN PREADOLESCENTS' DRAWINGS IN FIVE ENGLISH-SPEAKING COUNTRIES*¹

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SUMMARY

The purpose was to study children's expression of cooperation and other values and attitudes. It was assumed that a comparison of national groups of similar ethnic derivation would show genetic differences to be minimal and differences in results attributable largely to environmental influences. Subjects were 100 boys and 100 girls, ages 11 and 12, from each of the following countries: Australia, Canada, England, New Zealand, and United States, making a total of 1000. Dennis' draw-a-man task was administered and then the child drew himself and someone else, doing something. Scores for smiling and hostility were consistent with Dennis' findings. Dyad scores showed United States children to be high in smiling and low in competition, cooperation, games and sports, and work. New Zealand and Canadian scores showed many similarities, being high in cooperation and work. English children ranked highest in competition, Australians in humor.

A. INTRODUCTION

Studies of group values through analyses of children's drawings have been carried on in many cultures by Dennis (3) and his colleagues (4, 5). Dennis has presented evidence to show that when preadolescent boys are asked to draw a man, any kind of man they wish, they most often draw the types of men they admire and that the contents of their drawings reflect social values. The incidence of smiling pictures, for example, indicates the degree to which

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happiness is a value in the culture. Although children's drawings are also used for testing intelligence and for clinical diagnosis, Dennis' method is not concerned with individual children but with the frequency with which certain concepts are expressed by a group. Gardiner (5) has assembled frequencies of the depiction of hostility in many of the same groups for which Dennis gives data in other categories; he interprets hostility shown in drawings as including expression not permitted through other modes. The frequency with which hostility is pictured may be an indication of the frequency with which the subjects experience hostile feelings, or the extent to which hostile behavior is typical of the society.

The present study is an attempt to compare five English-speaking countries in terms of the values reflected in preadolescents' drawings. The groups compared are from England, Canada, United States, Australia and New Zealand. England is the "mother country" of the other four whose populations have been augmented by immigration largely from Northern and Western Europe. Non-Caucasian individuals have been excluded from the samples.

We hypothesized that the differentiation of the four daughter countries from the mother country would reflect the length of time since the split occurred, as well as the condition of life prevailing at the present time. In addition to comparing the five samples on smiling, hostility, and other indications of values and interests through the drawing of a man, we wanted to tap attitudes toward cooperation, competition, and other ways of relating to people. Dennis suggested in a personal communication that we ask the child to draw himself and another person. We therefore collected two drawings from each subject. While Dennis and Gardiner have published frequencies of categories from boys' drawings only, the present study includes 100 girls from each country, as well as 100 boys.

We predicted that New Zealand children would indicate more cooperation and less hostility than American children. Social welfare measures in New Zealand provide many supports to health. Adults' concern with children's well-being can be documented by studies comparing New Zealand parents and teachers with those in the other countries. For example, high levels of parent-child interaction have been found, perceived by both boys and girls as coming from both mothers and fathers (8). Attitudes, beliefs, and perceptions of teachers were compared in 12,000 teachers representing New Zealand, Australia, England, and the United States (1). New Zealand teachers were significantly lower and American teachers significantly higher than teachers from the other countries in emphasis on punishment, discipline, and control in the classroom and on belief in punishment as an effective motivator. New Zealand teachers ranked highest in the belief in rewards as motivators. From

this information, as well as from more general conditions, we would expect New Zealand children to rank lower than Americans in hostility.

Canadians also show many evidences of concern for child and family welfare, through the Vanier Institute of the Family, children's allowances, comprehensive health care plans, and a high economic priority on education. Canada, Australia and New Zealand are uncrowded and unspoiled ecologically, as compared with the United States and England. Conditions of life in the latter countries are not as beneficial as in New Zealand. Canadians and Australians might be expected to fall between Americans and New Zealanders in evidences of hostility and cooperation.

England is old and crowded with a relatively rigid class system and a lower standard of living than the other countries. However, an extensive social welfare system provides for excellent physical care and education for all children. Adams' (1) cross-national study of teachers showed English teachers ranking highest in their belief that rules should be established by the teacher and not by pupils or by teacher and pupils together. English teachers believed less than other teachers in rewards as motivators and in intrinsic motivation. We predicted more hostility and competition and less cooperation in English children than in the other British groups.

Dennis found the highest incidence of smiling (75%) in Old Americans and the lowest in more recently arrived ethnic groups. Northern European groups were still lower and below them were Middle Eastern groups and, showing fewest smiles, were the groups least touched by the modern world. We therefore predicted that our American sample would draw more smiling figures than would the others, that Canadians would be second and English last.

Having frequently noticed in casual observation that Canadian and New Zealand children are more active in sports and games than are Americans, we predicted that the United States would rank last for depicting sports and games. Because of Bronfenbrenner's (2) comments on the paucity of interactions between American adults and children, we expected that Americans would draw the smallest number of pictures showing an adult with the child. On the basis of known concern of New Zealanders with the physical and mental health of children, and our own findings on high interaction levels between parents and children (8) we predicted that their children would draw a relatively large number of pictures showing an adult with a child.

B. METHOD

1. Subjects

One thousand drawings were obtained from 100 boys and 100 girls in one town in each of five countries, Australia, Canada, England, New Zealand, and

United States of America. The children were 11 and 12 years old. They came from publicly supported schools in towns of between 10,000 and 30,000 population. The towns consisted of relatively stable, settled populations, with no appreciably sized ethnic groups of recent arrival. We cannot claim that they accurately represent the populations of their respective nations. Efforts were made in consultation with school officials to use schools which drew on a broad representation of the population of the five towns. When a school was selected, all the children in the appropriate grade or form were tested. When more than the required number of drawings were obtained, the first 100 complete drawings were scored. Black children's drawings were eliminated, since there were not enough of them to score separately. In New Zealand, Maori children's drawings were scored separately and those results have been reported (7).

2. Procedure

The principal introduced the examiner to the teacher, who was then free to leave the room. Dennis' procedures were followed. One of the authors, or a trained assistant (not the teacher) was always in charge of the class while the children were drawing. Classes varied in size from about 15 to 30. Subjects were given sheets of typing-size paper and told, "I want you to draw a picture of a man. You may draw any kind of man you wish, but draw a whole man, not just the head and shoulders." When the man was finished, we said, "Now turn the paper over and draw a picture of yourself and somebody else. It can be anyone you like, a friend, teacher, brother or sister, mother or father, anyone you wish. Draw yourself and this person doing something, anything you like." When the drawings were collected, the examiner asked about the person and activity depicted when they were not clear.

The drawings were completed in about half an hour. Then the examiner offered to answer any questions. A lively period invariably followed, moving quickly away from the test to the examiner's experiences in other countries.

3. Scoring

For the pictures of the man, smiling and humor were scored according to Dennis' (3) guidelines which are, in essence, that both corners of the mouth turn up. Hostility was scored according to Gardiner's directions (5) which were actually developed in collaboration with Dennis. Gardiner stated his criteria as including "presence of weapons (any figure with a gun, knife, sword, etc.), figures of boxers, wrestlers, soldiers or other persons shown in a posture preparatory for physical struggle—i.e., bared fists or kicking—representa-

tions of death or injury, and the delineation of insignias (badges, emblems, medals) commonly associated with cowboys, military figures, etc" (5, p. 261). Humor was scored by referring to Dennis' text and examples (3). Fantasy was our category in which we placed depictions of unreal creatures, situations and activities. The dyad was scored on smiling and hostility, on whether the other person was adult or child, family or nonfamily, and on themes of competition, cooperation, games and sports, achievement, and work. Competition was scored plus when competitive games were shown or when people compared products, such as holding up the fish they had caught to see which was bigger. Cooperation was noted in any situation where people helped each other, such as practicing catching a ball, paddling a canoe, putting a bandaid on a wound, and setting the table together. Thus a depiction of a sport or game might also be scored as competitive, cooperative, or neither. For example, a picture of two people holding fish poles and lines was scored as a sport, but as neither cooperative nor competitive. Most dyads showed the self with a like-sexed peer. Scoring the presence of an adult was usually unambiguous. To determine whether the other person was a family member, it was necessary to see the label or to ask the child.

Two or three people (one or two of the authors and one of two assistants) scored all the drawings separately. When the first two scorers disagreed on any item, they discussed the scoring until they either came to an agreement, or called in the third scorer, who made the decision. It was rarely difficult to reach consensus, discrepancies usually being the result of one person failing to see an item that was readily observed when pointed out.

C. RESULTS

1. *Drawing of a Man: Cross-National Comparisons*

Table 1 shows percentages of boys and girls in samples from five countries whose drawings indicated smiling, hostility, humor, and fantasy.

a. *Smiling.* Table 2 places the obtained boys' frequencies for smiling in relation to Dennis' data. The American sample falls between Dennis' various American groups, as do also the Canadian, Australian, and New Zealand samples. The English sample is very close to Dennis' Scottish sample. Tests of significance of differences between percentages showed that the English boys' sample produced fewer smiles than each of the others ($p < .01$ for Canadian, U.S., and N.Z.; $p < .05$ for Australia).

Although cross-national differences among the girls were smaller, the English girls made fewer smiling pictures than did the New Zealanders and Canadians ($p < .05$).

TABLE 1
CONTENTS OF DRAWINGS OF MAN AND DYAD BY CHILDREN IN FIVE COUNTRIES

Percentages	Australia		Canada		England		New Zealand		United States		Total	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
On man												
Smiling	43	46	65	57	29	41	51	59	56	52	48	50
Hostility	8	2	3	5	9	2	9	0	13	0	8	2
Humor	24	18	12	1	15	11	17	8	12	17	16	11
Fantasy	0	0	2	0	2	2	6	0	11	5	4	1
On dyad												
Smiling	37	55	61	77	35	43	40	56	75	80	50	62
Hostility	18	3	11	0	16	0	16	1	17	7	15	2
Cooperation	21	19	28	44	16	21	32	32	8	12	21	26
Competition	30	5	29	8	42	12	24	7	3	1	26	7
Work	2	3	5	12	4	10	11	11	2	0	4	7
Games & Sports	56	33	58	49	52	41	53	40	16	14	47	35
Adults	5	0	9	4	11	2	14	7	9	5	10	4
Family	7	10	20	12	13	6	17	12	6	15	12	11

b. Hostility. Table 2 also shows frequencies of hostility shown by boys in the present study in relation to samples obtained in other parts of the world by Dennis and others. England, Australia, and New Zealand cluster closely, with U.S.A. higher and Canada lower. All of the present samples rank in approximately the lower third of the list. The only significant differences among the present five samples is that Canada ranks lower than U.S.A. ($p < .01$) and lower than Australia ($p < .05$). Girls produced so few signs of hostility that tests of differences are not possible.

c. Humor. Australian boys drew the largest number of drawings with humor, exceeding Americans and Canadians at the .05 level. Australian girls also ranked highest in humor, differing significantly from Canadians ($p < .01$) and New Zealanders ($p < .05$). Canadian girls' humor was less than American and English ($p < .01$) and also less than New Zealand ($p < .05$). Boys produced many more humorous drawings than girls.

d. Fantasy. Although numbers of drawings showing fantasy are small, American boys exceeded both English and Canadian boys ($p < .01$). The Australian boys drew no pictures with fantasy. Of the seven girls who employed fantasy, five were American, two English.

2. *Drawing of a Dyad: Cross-National Comparisons*

Table 1 shows percentages of boys and girls in the five samples whose drawings of a dyad depicted smiling, hostility, cooperation, competition, work, games and sports, adults, and family members.

a. Smiling. United States boys and girls drew more smiling faces than did any other groups. Differences were all significant at the one percent level except for American-Canadian.

b. Hostility. No significant differences were shown.

c. Cooperation. New Zealanders and Canadians ranked high, Americans low. New Zealand boys were higher than English and American, ($p < .01$). American boys were lower ($p < .01$) than New Zealand, Canadian, and Australian. Canadian girls scored significantly higher than English, Australian, and American. New Zealand girls were significantly above Australian and American.

d. Competition. English children ranked highest in competition. Differences were significant for boys but not for girls. English boys scored higher ($p < .01$) than New Zealanders and Americans. Americans were significantly lower than all other groups.

e. Work. Work was seldom depicted, but New Zealand boys showed more of it than other groups and significantly more than English and American

TABLE 2
PERCENTAGES OF DRAWINGS BY BOYS, PORTRAYING SMILES^a OR SOME FORM OF HOSTILITY

		<i>Smiles</i>			
75	Old Americans	42	Brooklyn Yeshiva boys	22	Kyoto
—	—	41	Brooklyn Hassidim	21	Cambodia
—	—	40	—	20	Mexico City
65	Canada	39	—	19	Heidelberg
—	—	38	Nonorthodox Israelis	18	(<i>N.Z. Maori N = 25</i>)
—	—	37	Gothenburg	17	Navahos
59	Brooklyn W. Christian	36	Brooklyn Negroes	16	San Cristobal
58	—	35	Japanese village	15	Beirut
57	—	34	England, Taipei I	14	Ankara
56	South Kingstown, R.I. (W)	33	Edinburgh	13	Teheran, Armenian Lebanese
—	—	32	Taipei II	12	Mississippi Negroes
—	—	31	—	11	Orthodox Israelis, Athens, Lebanese villages I
—	—	30	—	10	villages I
51	New Zealand (W)	29	—	9	Chiapas Indians
—	—	28	—	8	Lebanese villages II
—	—	27	—	7	—
—	—	26	—	6	—
—	—	25	—	5	—
43	Australia, Brooklyn public school Jews	24	—	4	—
—	—	23	—	—	—
				<i>Hostility</i>	
35	Thailand	—	—	8	Australia
34	—	—	—	7	—
33	—	—	—	6	Mexico (Ladinos), Mecca, U.S. Negroes (Mississippi)
32	N.Z. Maoria (N = 25)	17	Yugoslavia	5	Lebanon
—	—	16	—	4	—
—	—	15	Algeria ^a (N = 73)	3	Syria ^a (N = 91), Mexico City, Canada
—	—	14	—	—	—
26	Germany	13	Sweden ^a (N = 40)	—	—

($p < .01$). American girls drew no pictures with work themes. Canadians, New Zealanders, and English were similar in frequencies, exceeding Australians significantly ($p < .01$ for Canadians, $p < .05$ for New Zealanders and English).

f. Games and Sports. American boys and girls drew pictures of sports and games less often than their age mates in the other four countries ($p < .01$). Otherwise, the only significant difference between groups was that Canadian girls exceeded Australian at the five percent level.

g. Adults. Few pictures showed adults. New Zealand children ranked highest, Australian lowest. The only significant difference was between boys in New Zealand and Australia ($p < .05$).

h. Family. Among boys' groups, Canadians and New Zealanders included family members more than did Australians and Americans ($p < .01$). Among girls, the only significant difference was that Americans drew more family members than did English ($p < .05$).

3. Overall Sex Differences

More significant differences were found between boys' groups [39] than between girls' groups [27]. With differences at the one percent level, the totals were 32 for boys and 19 for girls. For drawing the man, the numbers of differences at the one percent level were 7 for boys, 3 for girls; on the dyad, these figures were 25 and 16.

In a comparison of all 500 girls with all 500 boys, boys scored significantly higher ($p < .01$) in hostility, humor, and fantasy on the man drawing. Similarly, for the dyad, boys exceeded girls in competition, games and sports, hostility, and adults. Girls drew more smiles ($p < .01$) and more work ($p < .05$). Differences were not significant in frequencies for cooperation and family.

D. DISCUSSION

1. Drawing of a Man

The results for frequency of smiling are consistent with Dennis' findings and generalizations on geographic and cultural characteristics of groups drawing high numbers of smiling men. Table 2 shows the four English-derived groups clustered between Dennis' Old Americans and Brooklyn Jews, while the English group is placed close to the Scottish group. Dennis has noted that Americans draw a high incidence of smiling men, as compared to groups in all other parts of the world, and that among Americans, the highest frequencies are drawn by "Old Americans," white Christians whose ancestors have

been in the United States for several generations. The more recently-arrived the ancestors, the fewer smiles American boys tend to draw. Our Canadian sample ranks next to Dennis' "Old Americans" and indeed the Canadian children were from an area settled over 150 years ago by British people and since joined by a few Northern Europeans. Our results for Maori boys (7) are also consistent with Dennis' (3) conclusion that there is a gradient extending from the Old Americans of European descent, through groups presently living in Northern Europe and Israelis of relatively recent European ancestry, to persons who have only recently begun to be "Westernized." If it is assumed that Dennis' interpretation is correct, our four English-derived groups have followed the expected pattern in holding hedonistic values to a high degree, as compared with the rest of the world, including the English groups. The low level of the English groups is also consistent with the findings of Adams and associates in their research on teachers. English teachers put significantly less emphasis than American, Australian, and New Zealand on rewards, establishment of rules by pupils, and agreement between teachers and children on rules. The espousal of these values suggests that a teacher cares about the happiness of pupils.

In comparing hostility in drawings of the present five groups with the hostility shown in the world-wide collection of samples, these English-speaking boys rank low and close to one another. As predicted, the American boys rank higher than New Zealanders, but other predictions were not borne out. Since the greatest difference in hostility appeared between the American and Canadian samples, contrasts between the conditions of these two groups of children should be sought in an effort to locate sources of hostility. These Canadian children enjoy a high standard of living in regard to food, space, and advanced social legislation that favors families. A comparison between the American and Canadian schools might yield some explanation of the difference, since the examiners' impressions were that the Canadian buildings and equipment were vastly superior to the American schools in which the investigation took place.

The Australian children ranked first in humor, the Canadians last. The United States was the only country in which girls drew more funny pictures than boys. The overall sex difference was definitely in favor of boys. Sutton-Smith (9) has found that children ask riddles frequently in countries where high authority rests in adults and where ridicule is used. Evidence from Adams (1) shows that in teachers' reports as to having rules about pupil behavior, Australians ranked significantly higher than Americans, English, and New Zealanders. The American group was significantly lower than the other three. (Canadians were not included in Adams' study). It seems possible,

then, that the use of humor in drawings serves a purpose similar to the function of riddles in a situation where adults exercise strong authority over children.

2. *Drawing of a Dyad*

Whereas the drawing of a man indicates personality values or abstractions representing a typical or perhaps ideal man in a particular culture, the dyad shows interaction between the self and others. We do not know whether the dyad represents values and ideals for social relationships, or typical social behavior, or both.

United States groups occupied either highest or lowest ranks on all but one of the categories. Lowest in competition, cooperation, work, games and sports, the American children drew the largest number of smiling faces. What *did* the American children show themselves and their friends doing? Very often they were "just standing." If high frequency of smiling drawings indicates a high evaluation of happiness, as we believe Dennis has shown, then it seems as though the American boys and girls show a pervasive desire to be happy. At the same time, they showed relatively little action and involvement with the pursuits that might yield satisfaction. Possibly the passivity suggested is related to heavy use of television by American children. Since preschool children average over 50 hours a week viewing (6), the development of initiative and action patterns may have been stunted from an early age. However, Canadians have had access to television for many years, and it seems unlikely that their high involvement with games and sports would not have also suffered, were television the main depressant. The only category in which American boys and girls differed greatly in rankings was in showing family members. Girls ranked highest among girls' groups and boys lowest among boys'. The boys from the five countries were almost equal in the percent that showed hostility.

New Zealand children ranked highest in number of adults depicted, and scenes of work. They were very close to the top in showing cooperation; only Canadian girls exceed the New Zealand girls, while New Zealand boys showed the most cooperation in their dyad-drawings. These results are in the hypothesized direction. They occupied middle ranks for competition, smiling, hostility, games and sports, and were second in depicting family members.

Canadian scores were more like the New Zealand pattern than any other. In the smiling category, Canadian children were between American and New Zealand, confirming the high frequency of smiling that Canadians produced in the man. Canadian drawings emphasized cooperation, sports and games, work, and family, suggesting the involvement in action and interaction seen in the

New Zealand drawings. Perhaps Canadian children, with an esteem for happiness that almost matches American children's, are more actively engaged in pursuits that might yield satisfaction.

Australian drawings resembled Canadian and New Zealand more than they resembled English or American. Australian boys scored fairly high in competition, and, along with girls, moderate in cooperation and smiling. Australians were in the low ranks for work and family themes, and lowest for drawing adults. In games and sports, Australian boys scored almost the same as English, Canadian and New Zealand boys, all of whom were much higher than American. Australian girls were lower in sports and games than the other British groups, but still higher than American. On the basis of the finding that Australian drawings of the man scored high in humor and zero in fantasy, a tentative generalization is that the pictures suggest self-contained individuals who interact moderately, with preference for peers.

English drawings were lowest in smiling and highest in competition. The profile of English scores was more similar to the Australian than to any other. English scores were moderate to low for cooperation, work, adults, and family.

Since the number of cross-national differences was greater for boys than for girls, one might explain this overall sex difference in terms of the test being more compatible with male modes of expression. However, almost all mental and physical measurements show greater variation in boys than in girls. It therefore seems reasonable that cross-national differences should be greater for males than for females. Girls around the world are thus more alike than are boys. The overall sex differences are interesting in regard to competition and cooperation. While boys indicated much more competition, they showed about the same frequency of cooperation as girls. This result suggests that being competitive does not preclude being cooperative. (Indeed, we have evidence from a study in preparation, on the New Zealand sample used in the present study, that some of the boys switched easily between cooperative and competitive strategies in a game.)

E. CONCLUSIONS

While reliability is a difficult problem in this type of study, we are reassured by the fact that the data on smiling are so consistent with the findings of Dennis and others. Likewise, rankings of hostility data in Gardiner's worldwide samples are indications that our procedures matched those of Dennis and Gardiner and that certain attitudes and beliefs are being consistently tapped.

The results confirm our primary hypothesis, that cooperation would be

expressed more frequently in drawings from New Zealand, where the quality of life is high in physical and psychological terms, than in the United States and England, where ecological problems are more severe and the psychological environment less hospitable to children and families. Consistent with this finding and with our predictions are the ranking of Canadian and Australian boys' cooperation scores between those of American and New Zealand boys. Although girls' rankings were slightly different, the results on cooperation are what we expected to find in a healthy environment that supports child growth and family living. As expected from observation and our own research, New Zealand children ranked high in drawing adults and family members. We were mistaken, however, in expecting United States children to rank low in these categories.

Predictions concerning hostility were weakly supported by the man drawing, in which American boys ranked high and Canadians low, but New Zealanders did not differ significantly from others. As expected, English children scored higher in competition, and lower in cooperation than New Zealanders, whose living conditions are most favorable, and whose teachers believe most strongly in cooperative establishment of rules, low punishment, and high rewards. Fulfilling our anticipations, United States children showed very few scenes of sports and games. The other four national groups showed many sports and games, with virtually no differences between them.

We correctly predicted that the first country to split off from the mother country would differentiate more in terms of results in children's drawings. The American scores differ more from the English than do Canadian, Australian, or New Zealand. In fact, the profiles of the three daughter countries, as shown in scores for drawings, are very similar. In general, the striking difference between American drawings and all others is in amount of content indicating action and involvement with other people.

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DETERMINANTS OF NONSTATIONARY PERSONAL SPACE INVASION*

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SUMMARY

The personal space of 116 pedestrians in midtown Manhattan was violated by a male or female experimenter. The subject population consisted of predominantly middle-class adults of all ages. Fifty-three percent of the subjects were male, and 27 percent were black. The experimenter walked toward a target subject in an unwavering straight line. Subjects and experimenters approached and passed each other in a section of the street where a measurement grid had been drawn on the sidewalk. Observers measured the point at which subjects initially deflected from the collision line, and the distance between subject and experimenter at the point at which they passed each other. The results indicated that males were given less frontal space than females ($p < .01$). About 40 percent of the trials resulted in mild *brushes* even though the line of vision between the experimenter and subject was always clear. The male experimenter was brushed more often than the female experimenter ($p < .05$). These results differ markedly from the findings of laboratory experiments.

A. INTRODUCTION

Experimental investigations of the effects and determinants of personal space invasions have become increasingly popular in recent years (4, 14). Perhaps the most consistent finding in the area concerns the relationship between physical distance and psychological distance. A variety of studies have demonstrated that less personal space is maintained for friends (9), peers (8), and people with whom attitudes and political and cultural orientations are shared (1, 12, 15). The interaction between personal space and spatial relationships between people and objects has also received considerable attention. Systematic effects have been produced by varying such factors as the angle and position of chairs (3, 5, 13) and the angle at which one person approaches another (7, 11). The least consistent findings in the area concern the effects of the sex of the person being approached and the sex of the approaching person on the amount of personal space that is ultimately obtained. The experimenter

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(*E*) in these laboratory studies is either the person being approached or the approaching person. In the former case, the subject (*S*) is told to walk toward the *E* and stop at a comfortable distance. In the latter, *E* walks toward the subject and the subject tells *E* when to stop. The distance between *S* and *E* in either case defines the amount of personal space that *S* gives *E*, or that *E* receives from *S*. Dosey and Meisels (2) found that females approached closer to other females than to males, while the personal space given by males did not differ as a function of the sex of the person approached. Kassover (6) found that both male and female subjects stood closer to a female *E* than to a male *E*. In a study in which the subjects were stationary, Pederson and Heaston (10) found that in both simulated and experimental conditions closer frontal approaches were permitted by males than by females. Although it is difficult to derive any clear-cut conclusions from these limited data, one interpretation is that although American females prefer to be given more personal space than American males, they in fact are given less.

An important limitation in all but a few of the personal space experiments has been the artificiality of the experimental situations and the overreliance on static conditions in which at least one of the observed persons is stationary. This limitation has been particularly evident in the studies in which the sex of the *E*s and *S*s has been an experimental variable. In many real life situations both persons are nonstationary and presumably carry their personal spaces around with them, like protective screens. Violations of nonstationary personal space and the behavioral effects of such violations may depend upon a somewhat different set of norms than we find in the traditional laboratory setting.

The purpose of the present study is to examine the determinants of nonstationary space invasions in a field-experiment format. The strategy of the study is to have a male and a female *E* approach solitary pedestrians by walking toward them in an unwavering straight line. Observers then record the distance at which the subjects first deflect from the line of contact and the distance between the *E*s and the *S*s at the point at which they pass each other.

B. METHOD

1. Subjects

One hundred sixteen adults who were walking on 34th Street between Madison and Fifth Avenues in New York City on a Saturday afternoon in April, 1974, served as experimental subjects.

2. Location

The 34th Street location was chosen for two reasons. First, the flow of pedestrian traffic was constant but not so heavy that the *E*s would have

difficulty in maintaining a straight-line approach toward the *Ss*. In addition the flow of pedestrians was light enough so that the subjects could easily see the approaching *E*. Second, the location provided an ideal hiding place for the observers. The display windows of a major department store were indented between pairs of structural columns. Each window had a small concrete lip where the observers could unobtrusively sit and record data. Subjects were unlikely to notice the observers in the first place, and if they did, there was no cue as to their function; the observers appeared to be casually lounging in front of the display windows.

3. Procedure

Two observers (O_1 and O_2) stationed themselves in front of the display window, sitting about 10 feet apart. Directly in front of them a measurement grid was drawn on the street in light blue chalk. The grid was barely noticeable to passing pedestrians and seemed to draw virtually no attention throughout the day. The dimensions of the grid are presented in Figure 1. The grid was 8 feet wide and 25 feet long. It was drawn in the center of the sidewalk. Marks were made at 30-inch intervals lengthwise, and at 6-inch intervals from side to side.

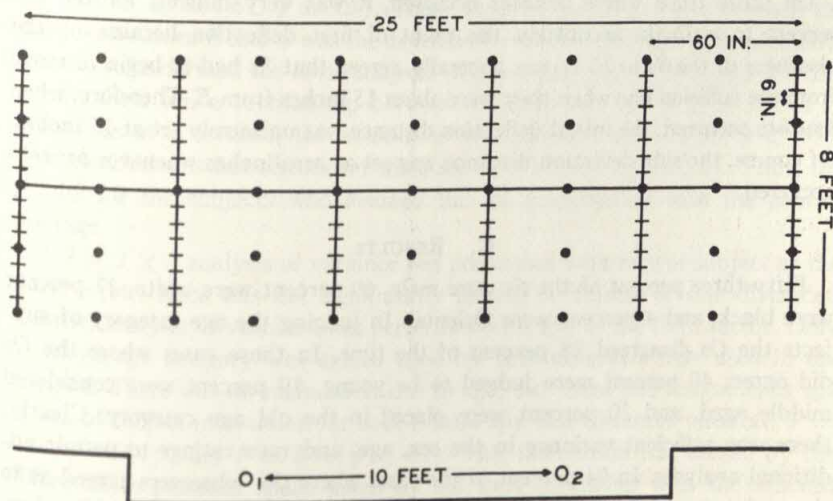


FIGURE 1
SIDEWALK MEASUREMENT GRID AND OBSERVATION POSITIONS

The male *E* was 5'10" tall and of medium build. The female *E* was 5'7" and also of medium build. Both *Es* wore casual, middle-class, sport clothes. The *Es*

practiced walking together at a uniform speed, and the walking speed of the *Es* was later measured during each experimental trial. Throughout the experiment, the male and female *Es* alternated trials.

Each trial began as an *E* stationed himself (herself) at the corner of Madison and 34th Street, about 100 feet from the measurement grid. The *E* picked as the target *S* the first person walking alone at a normal pace toward the grid at about 100 feet in the opposite direction. Only a few choice conflicts arose and these were resolved by choosing the person who would arrive at the most central portion of the grid. Having picked the target *S*, *E* walked toward him (her) in a straight line, at constant speed, avoiding direct eye contact. *Es* were directed to stop only if a direct frontal collision was imminent, a situation which never occurred. Slight collisions or *brushes* were allowed to occur.

For each trial, the observers independently recorded the distance at which the *S* first began to deflect away from a collision with *E*. The observers also recorded the distance between the *S* and *E* at the point at which they crossed paths. After noting these distances, the observers also noted the *S*'s race (black, white, other), socioeconomic status in terms of general appearance and apparel (low, middle, high), and age group (young—18 to 34 years; middle—35 to 49 years; old—50 + years).

On those trials where *brushes* occurred, it was very difficult for the observers to estimate accurately the point of first deflection because of the closeness of the *Ss* to *E*. It was generally agreed that *Ss* had to begin to move from the collision line when they were about 15 inches from *E*. Therefore, when *brushes* occurred, the initial deflection distance was uniformly set at 15 inches. Of course, the side deviation distance was set at zero inches whenever *brushes* occurred.

C. RESULTS

Fifty-three percent of the *Ss* were male, 69 percent were white, 27 percent were black, and 4 percent were Oriental. In judging the age category of subjects the *Os* disagreed 28 percent of the time. In those cases where the *Os* did agree, 40 percent were judged to be young, 39 percent were considered middle aged, and 20 percent were placed in the old age category. Clearly, there was sufficient variance in the sex, age, and race ratings to permit additional analyses. In 94 percent of the cases where the observers agreed as to the socioeconomic status of the subjects, they were judged to be middle class. As a consequence no further analyses could be conducted with these data. The lack of variance in this category is probably due more to the difficulty

of judging SES on the basis of general appearance and attire than to the lack of true variance in the population.

Forty-six of the 116 trials resulted in *brushes*. Since the distances in these cases were uniformly set at 15 inches, they were excluded from the calculation of interrater reliabilities. The interobserver reliability coefficient for the judgment of frontal deflection was .83, and the coefficient for side distances was .49. Typically, side distances were relatively small, and the difficulty in judging distances at the crossing point, as well as the *O*'s poor angle of vision, served to reduce the reliability of side judgments.

With sex of *E* and the sex of *S*s as factors, a 2×2 analysis of variance was performed on the frontal deflection distances. There was a significant main effect due to sex of *E* ($F = 6.28$, $df = 1$, 112 , $p < .05$). Male *Es* were given an average of 37.1 inches of frontal personal space, while females were given an average of 55.9 inches. There were no differences in the amount of space given by male ($\bar{X} = 46.4$) and female ($\bar{X} = 46.5$) subjects. The interaction term was not significant ($F = 2.40$, $df = 1$, $p = .12$), though there seems to be a tendency for males to give one another the least space ($\bar{X} = 31.2$), and females the most space ($\bar{X} = 61.6$). This interaction is significant, however, when only those subjects who did not *brush* the *Es* were used in the analysis ($F = 4.76$, $df = 1, 62$, $p = .03$). There were no significant effects when the distance between *E* and *S* was the dependent variable. Separate, nonparametric tests were performed for those subjects who *brushed* the *Es*, to assess whether or not there was a relationship between *brushing* and sex of *E* or sex of *S*. When sex of *E* is used, the association is significant ($\chi^2 = 3.88$, $p < .05$). The association is not significant when sex of *S* is used ($\chi^2 = 2.6$). Thus, the results for the subjects who *brushed* the *Es* is consistent with the overall findings.

A $2 \times 2 \times 2$ analysis of variance was performed with race of subject as the third factor. Race was not significantly related to frontal or side distances. Another analysis of variance was performed with age as the third factor. Only *S*s whose age category was agreed upon by both observers were used in the analysis. There was no main effect due to age, but there was a significant age \times sex of subject interaction for both frontal and side distances (frontal: $F = 4.32$, $p = .01$; side: $F = 5.76$, $p < .01$). This interaction was caused by the difference in personal space given by old men compared with the amount given by old women. Old men gave almost three times as much space as old women, but generalizations from these data should be restricted because it is based on a relatively small sample size ($N = 17$).

D. DISCUSSION

1. Sex Effects

The results of this field experiment are clearly at odds with the findings of laboratory experiments of stationary personal-space invasion. We found that, regardless of the sex of the *S*, females were given more personal space on the street than males. Dosey and Meisels (2) found an interaction between sex of *S* and sex of *E*; females approached closer to other females than to males. Our results indicate no such interaction, and the means are in the opposite direction. Kassover (6) found that all *Ss* gave less personal space to females than to males. Our results indicate exactly the opposite. Apparently the norms governing the limits of personal space in stationary laboratory situations may be different from the norms of the street. It may be more permissible to move close to a stationary female than a nonstationary female. Of course, the difference between the present findings and laboratory results could also be due, in part, to differences in the type of subject tested (i.e., New York City pedestrians *versus* college students).

2. Proportion of Brushes

The most surprising experimental finding was the high percentage of *brushes* that occurred. In spite of the fact that all *Ss* had a clear line of vision in the direction of *E*, and in spite of the fact that a trial started when the *E* and the *S* were approximately 200 feet apart, 42 percent of the trials ended with some physical contact. In these cases *Ss* refused to give up unilaterally their right of way until the very last moment. This phenomenon suggests the presence of a strong norm of bilateral accommodation in street behavior. We recommend that the skeptical reader try walking straight at people, at a constant rate of speed, on any moderately active street and record the proportion of *brushes*.

3. Implications

If the norms of the street differ so dramatically from the norms of more static environments, it seems reasonable to assume that other situations will produce still different effects. Some interesting locations for further study of nonstationary personal space include department stores and other retail establishments, sports events, and highly active work settings such as construction sites and busy offices. As an unobtrusive, manipulable, and easy to measure construct, personal space may prove to be a highly effective variable for the study of comparative norms with the use of a nonquestionnaire methodology.

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SUMMATION THEORY AND THE PREDICTIVE POWER OF SUBJECTS' OWN SALIENT BELIEFS*

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SUMMARY

It is argued that the low correlations of summation predictions with semantic differential attitude scores have been due to two problems: (a) the cueing effects of the semantic differential scales themselves; and (b) the elicitation of nonsalient, as well as salient, subject beliefs. An experiment was conducted that eliminated these limiting methodological characteristics. Summation theory predictions were found to correlate with attitude .77 ($p < .001$), a significantly higher correlation than those usually obtained. In addition, a formula for the proportion of positive to negative salient beliefs was presented and was found to correlate with attitude .60 ($p < .01$). Implications for attitude measurement are discussed.

A. INTRODUCTION

According to Fishbein a crucial assumption of summation theory is that "an individual's attitude is viewed as a function of the *individual's own beliefs* about the object (i.e., those in *his* hierarchy) and the evaluative aspects of those beliefs" (9, p. 64 italics in original). However, summation theory has not proven to be an especially powerful predictor of attitude when the attitude prediction is based on the subjects' own elicited beliefs as opposed to the use of standard beliefs (those common to the population). Kaplan and Fishbein (9) did obtain a correlation of attitude based on elicited beliefs with an estimate based on semantic differential scales ($r = .37$) which compared favorably with the correlation of an attitude estimate based on a list of standard beliefs and the same dependent measure ($r = .36$). This parity with the predictive power of standard belief lists was achieved by considering only the first six responses listed by each subject. Kaplan and Fishbein argued that previous research by Hackman and Anderson (8) found standard beliefs to be a better predictor only because estimates based on subjects' own elicited beliefs were computed over *all* of a subject's beliefs instead of only his

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salient (most readily elicited) beliefs (9). Fishbein contends that only salient beliefs are predictors of attitude (6, 7).

Although subjects' own beliefs were "significant" predictors of attitude in the Kaplan and Fishbein study ($p < .01$), one cannot be very impressed with a predictor that accounts for approximately 13% of the total variance. Thus, to date, we have no really convincing evidence for one of the crucial assumptions of summation theory. Kaplan and Fishbein's explanation of the low correlations is quite unsatisfying. They infer that because 35% of all subjects had scores of zero on the semantic differential evaluation of the stimulus concept, "social desirability" considerations affected their dependent attitude measure. We fail to see why such considerations would affect the semantic differential, yet not produce selective listing of beliefs or biased evaluation of the subjects' own beliefs and the standard beliefs. It was our concern that this poor correlation was due to the fact that Kaplan and Fishbein failed to consider fully the implications of belief salience for their experimental methodology and not due to a theoretical weakness of the summation theory.

Kaplan and Fishbein have argued that because of limitations in human information processing capacity only six to nine beliefs can be salient at a given time and that only these salient beliefs will be successful predictors of attitude. Since the Kaplan and Fishbein study, several researchers have investigated variables that produce belief salience (2, 3, 4, 5). Most significant for our purpose is the finding by Epstein (5) that a message cue can make an ordinarily nonsalient belief temporarily salient, thus producing an attitude shift. Epstein's manipulation involved the use of stimulus materials in which beliefs that were accepted but not usually salient appeared in experimental written messages. Our hypothesis was based on the belief that the *semantic differential scales themselves* functioned as salience-producing cues in the Kaplan and Fishbein study. Their study employed the stimulus concept "Negro individuals." The semantic differential scales indicated the following: clean-dirty, healthy-sick, wise-foolish, and harmful-beneficial among others. Each of these adjectives could function as a cue that makes salient a belief about Negro individuals that is not usually salient for a given subject. Thus it is possible that after completing the belief elicitation part of Kaplan and Fishbein's procedures, subjects manifested one attitude based on beliefs that were usually salient for him. As the subject worked his way through the semantic differential, however, he encountered cues that made *other* beliefs temporarily salient, thus changing his attitude from what it had been without the cueing effect of the scales. Therefore the present study employed a simple 11-place "extremely favorable" to "extremely unfavorable" scale in place of

the semantic differential technique. While this single scale is somewhat crude, its use certainly has precedents in the psychological literature. Moreover, the admittedly reduced reliability of the single scale test should work *against* attaining a strong correlation between a prediction based on subjects' salient elicited beliefs and the single scale dependent measure of attitude.

Another potential cause of this weak .36 correlation lay in the three minute time period during which Kaplan and Fishbein's subjects were required to generate responses. Kaplan and Fishbein deliberately chose a time period well in excess of that required to exhaust most subjects' salient array of responses because they wanted to compare predictions based on all subject elicited beliefs to predictions based on the six most salient beliefs. The result, however, was to require that subjects bring to the forefront of consciousness beliefs that are *not* usually salient in order to fulfill the experimenters' demand that subjects generate "three minutes worth" of beliefs. The result, we suspect, was analogous to Cronen's (3) finding that task requirements can cause subjects to make specific beliefs salient that are not usually salient, thereby causing attitude change. In the present study the contamination of nonsalient beliefs was reduced by establishing a timed cutoff point by means of a pretest.

Finally, consider the whole range of salience-producing cues in the Kaplan and Fishbein experimental situation. The sequence of events subjects encountered may be interpreted as follows: (a) Subjects respond to the stimulus concept by bringing to the forefront of consciousness their usually salient belief responses. (b) To comply with the demand characteristics of the experiment they must bring usually nonsalient beliefs to the forefront of consciousness in order to list them. (c) They encounter a set of standard beliefs about the stimulus which could function as a message that reinforces some previously listed beliefs and cue other nonsalient beliefs. (d) Finally, they encounter the semantic differential scales which, as we have contended, can selectively cue specific beliefs. Given this melange of beliefs and cues it is not hard to understand why none of the correlations obtained exceeded .37.

By eliminating the extraneous salience producing cues in the procedures we hypothesized that the correlation of predicted attitude based on individual subjects' own elicited beliefs with a dependent measure of attitude would be significantly higher than that observed by Fishbein and Kaplan.

We were, however, interested in more than a statistically significant improvement in prediction. We hoped to approximate Anderson and Fishbein's obtained correlation of .66 between summation theory predictions derived from a set of provided beliefs and a dependent measure of attitude (1). Anderson and Fishbein's findings were set as a goal because their study utilized a

fictitious person as the attitude object. In their study the semantic differential could not cue nonsalient beliefs unknown to the experimenters because the subjects had no beliefs about the stimulus object other than those presented to them.

B. METHOD

Subjects were 55 undergraduate students who were enrolled in the General Rhetoric program at the University of Massachusetts, Amherst. Each subject was asked to list as many "characteristics, qualities, and attributes" of politicians as he could during a one minute and 15 second period. This period of time was determined by an earlier pretest ($n = 21$). Most of the subjects in the pretest required a long pause to think of new descriptions after the first minute and 15 seconds. No subjects participated in both the pretest and the main experiment. The number of responses subjects elicited in one minute and 15 seconds during the main experiment ranged from three to 10 with a mode of six responses. Subjects evaluated each of their responses on a seven-place "good-bad" scale scored from $+3$ to -3 . They then performed a second evaluation of each response on a seven-place "probable-improbable" scale to show how strongly they believed that each response was really a characteristic of politicians. This scale was also scored $+3$ to -3 . These scales provided the measures of a_i and B_i in the summation model. Finally they filled out the 11-place attitude scale that appeared on a separate page below the word "politician" and ran from "extremely favorable" to "extremely unfavorable." This scale was scored $+11$ to $+1$.

C. RESULTS

A Pearson product-moment correlation of summation predictions based on subjects' own beliefs elicited during the one minute 15 second period and the obtained attitude measure yielded a correlation coefficient of $.77$ ($p < .001$). This was in fact higher than the $.66$ correlation obtained by Anderson and Fishbein who had used experimenter provided beliefs and a fictitious person as their stimulus concept. Fisher's \bar{z} was computed to compare these data to the correlation obtained by Anderson and Fishbein. The results in Table 1 clearly support the predicted significant increase in the magnitude of correlation between obtained attitude scores and predicted scores based on subjects' own salient responses.

D. DISCUSSION AND IMPLICATIONS

These results indicate that summation theory can function as a powerful predictor of attitude when estimates are based on subjects' own elicited beliefs.

TABLE 1
FISHER'S \bar{z} COMPARISONS

Comparisons	\bar{z}	p
Kaplan and Fishbein (9)—using subject elicited beliefs— <i>vs.</i> the present study	3.43	.01
Kaplan and Fishbein (9)—using standard belief list— <i>vs.</i> the present study	3.38	.01
Anderson and Fishbein (1) <i>vs.</i> the present study	1.33	.09 (ns)

This is crucial for the summation model because its theoretical assumptions specify that it is an *individual's* own salient beliefs that predict attitude. The poor correlation Kaplan and Fishbein attained was apparently due to the fact that they did not foresee the implications of belief salience for their methodology.

Because of our own research emphasis on the role of belief salience for communication, a secondary analysis was performed on the data.¹ We were concerned with how much of the variance on our dependent attitude measure could be accounted for by knowing only the proportion of short term memory space that is occupied by positive and negative beliefs. Thus we formulated a crude proportional formula that would account for the proportion of positive and negative beliefs to the total number of salient beliefs about a concept. Algebraically stated:

$$A_o = \frac{NP_{b_o}}{K_{b_o}} - \frac{NN_{b_o}}{K_{b_o}}$$

where:

A_o = Attitude toward object "O."

NP_{b_o} = Number of positively valenced beliefs about "O."

NN_{b_o} = Number of negatively valenced beliefs about "O."

K_{b_o} = Total number of *salient* beliefs about "O."

With this formula A_o values can range between +1.00 (positive) to -1.00 (negative). We were interested in the power of this formulation which uses only the crudest measure of affect (positive, negative, or neutral) plus the concept of limited short term memory hold. Predictions based on this formula were computed for the self-generated beliefs of the 55 subjects. We do not see this simple model as a competitor for summation theory. It is only a way of

¹ The authors' views on the implications of belief salience for the process of communication and persuasion are stated elsewhere (2, 3, 4).

examining the power of subject generated beliefs and the *salience* of those beliefs as attitude predictors. A Pearson product-moment correlation was computed with the dependent attitude measure. The obtained correlation was .60 ($p < .01$).

The implications we derive from this are as follows: (a) The existence of short term memory limitations is a crucial concern for attitude theory. If we know only the proportion of that limited memory space occupied by positive and negatively valenced beliefs, we can attain predictions which rival or excel those produced by multiple weighted formulas. (b) Because of the importance of salience, researchers must exercise extreme caution when considering the way in which experimental instrumentation influences the salience of beliefs.

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PERSONAL EVALUATIONS, LAUGHTER, AND AFFECTIVE JUDGMENTS*¹

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SUMMARY

Fifty-six subjects read positive or negative evaluations of their personality made by a bogus same-sex peer and then rated their immediate feelings. A second group of 22 subjects rated their feelings after reading the evaluations of a third person. It was found that personal evaluations evoked more spontaneous laughter than did the evaluation of a third person ($p < .001$). Inclusion of the factor of laughter in the experimental design disclosed that subjects who laughed felt more pleasant than those who did not laugh ($p < .008$) and that laughter was associated with affective state only in the negative evaluation condition ($p < .003$). Also, positive evaluations made the subjects feel good, and negative ones made them feel bad ($p < .001$). Results seemed to suggest that extreme affective arousal engenders laughter which, in turn, alters the judgments of one's affective state.

A. INTRODUCTION

Recent experimental work on interpersonal attraction indicates that a person who makes positive evaluations of the subject is generally judged more attractive than one who makes negative evaluations (2, 5, 6, 7, 9, 12). Also, positive evaluations elicit positive affective responses, and negative evaluations, conversely, elicit negative feelings (14, 15, 16). In one experiment (14), however, some subjects were observed to laugh after reading their evaluations by the stranger. The reason for this behavior is unclear. One purpose of the present study was thus to examine the role of two probable factors in the evocation of laughter.

In the previous experiment, Singh (14) provided the subjects with a list of 10 hand-written adjectives. They were informed that an unknown same-sex Purdue University student had examined their responses to a previously com-

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pleted attitude survey and then wrote the 10 adjectives as the *best* descriptions of the subject. The experimental task for the subjects was thus to read their evaluations and to indicate their immediate feelings. Unexpectedly, some subjects laughed after reading the evaluations. Why? Two reasons can be suggested. One reason could be the emotional nature of the personal evaluation itself. Evidence has been accumulating that personal evaluations cause subjects to become highly involved affectively in the processing of the stimuli and that their affective state undergoes changes along with the quality of the evaluations (15, 16). As laughter itself is an affective response, it is probable that emotional arousal produced by personal evaluations predisposes them to laugh. Another reason could be the incredibility of the personal evaluations manipulation. The personal evaluations were uniformly positive or uniformly negative; hence, the subjects might have disbelieved them, assuming that no college student can be so extreme in his judgment of other fellow students.

In the experiment reported in this paper, the same lists of adjectives were presented to one group of subjects as evaluations of their own personality and to another group of subjects as the evaluations of a third person. If emotional arousal makes them laugh, only the subjects receiving personal evaluations should laugh. On the other hand, the unbelievability of evaluations should make both groups of subjects laugh.

The second purpose of the present study was to ascertain the effect of personal evaluations and laughter on affective judgments. In the same previous experiment (14), it was found that laughter moderated the effect of personal evaluations on the ratings of personal feelings. Subjects who laughed after reading negative personal evaluations felt less unpleasant than those who did not laugh. There was not any such effect on the affective response elicited by positive personal evaluations. Since this finding was obtained incidentally, a systematic study seemed necessary before giving the observed effect a secure home within the attraction paradigm (5).

B. METHOD

1. *Adjectives Used for Evaluations*

From the Anderson list of 555 personality-trait words (1), 10 positive (*cheerful, considerate, dependable, friendly, humorous, loyal, responsible, thoughtful, trustworthy, and warm*) and 10 negative (*conceited, greedy, hostile, impolite, insincere, insulting, loud-mouthed, narrow-minded, quarrelsome, and selfish*) adjectives were selected for the manipulation of evaluations. These adjectives were written by hand on the evaluation sheet. Because the

subjects were run in a group, the color of ink of the handwritten evaluations varied from subject to subject.

2. *Subjects*

The subjects were 88 students from an introductory psychology course at Purdue University. They earned credit toward a class requirement. Of the total subjects, 56 were in the personal evaluations condition and 22 were in the other person evaluation condition.

3. *Procedure*

Two weeks prior to the actual experiment, the subjects responded to a 10-item attitude survey and signed up for the second part. In the experimental session, mixed groups of 20 to 25 subjects of both the positive and negative evaluation treatments were run. Upon arrival, each subject received a folder which contained a sheet listing 10 handwritten adjectives.

In the personal evaluation condition, the subjects were reminded of their previous attitude survey. They were informed that another fellow student examined their responses to the 10-item attitude survey in another experiment and formed impression of their personality. The handwritten attributes were presented as the best descriptions of the subject by the very fellow student. The experimental task for the subjects was to read the evaluations of their own personality and to rate their immediate feelings.

In the other person evaluation condition, the subjects were told that one student examined the responses of another student to a 10-item attitude survey and generated 10 traits as the best descriptions of the target person. Subjects were urged to read the comments of the second student about the first one and to rate their own immediate feelings.² Ratings of feeling were made on six seven-point scales (happy-sad, negative-positive, comfortable-uncomfortable, bad-good, pleasant-unpleasant, and high-low).

While the subjects were reading the evaluations, the experimenters took note of the subjects who showed signs of smiles and laughter. The subjects were also asked to indicate on the folder their first reaction after reading the evaluations in order to validate the experimenters' observation of the subjects' laughter. Following the data collection, the purpose, method, and rationale of the study were described to the subjects and they were debriefed.

4. *Design*

There were two main designs. One design was a Row \times Column contin-

² Before reading the evaluations, the subjects were urged to assume a neutral state—i.e., neither pleasant nor unpleasant—in an effort to produce a uniform initial affective state.

gency, having two rows (personal *vs.* other evaluations) and two columns (subjects who laughed *vs.* those who did not laugh). The dependent variable for this contingency table was the number of subjects in each of the four categories. The second design was a 2×2 factorial, with two levels of personal evaluations (positive *vs.* negative) and two levels of the subjects' classification as to laughter (those who laughed *vs.* those who did not). The dependent variable here was self-rated feelings.

C. RESULTS

1. Evaluations and Laughter

Of the 56 subjects receiving personal evaluations, 27 laughed after reading their evaluations. In the other person evaluation condition, in contrast, none of the 22 subjects laughed in response to evaluations. A chi square test indicated that this interaction between kind of evaluation and laughter was highly significant ($\chi^2 = 16.24$, $df = 1$, $p < .001$). It seems that extreme affective arousal is perhaps essential in provoking laughter, and that the incredibility of evaluations explanation for laughter can no longer be accepted at least within the limits of this experiment. Positive and negative personal evaluations evoked laughter in a similar way ($\chi^2 = 1.22$).

2. Personal Evaluations, Laughter, and Personal Feelings

Table 1 presents the mean feeling scores for positive and negative personal evaluations for subjects who laughed and those who did not laugh after reading their own evaluations by the stranger. An examination of this table shows that subjects who laughed ($M = 28.88$) generally felt more pleasant ($F = 7.62$, $df = 1/52$, $p < .008$) than those who did not laugh ($M = 25.35$), and that positive evaluations ($M = 39.28$) induced a more pleasant affective state ($F = 362.16$, $df = 1/52$, $p < .0001$) than did negative evaluations ($M = 14.95$). The latter finding provides a replication of the effect reported earlier (14, 15, 16). The Laughter \times Personal Evaluations effect on feeling ratings

TABLE 1
MEAN FEELING RATINGS AS A FUNCTION OF SUBJECTS' CLASSIFICATION AS TO
LAUGHTER AND THEIR PERSONAL EVALUATIONS

Subjects' classification	Personal evaluations			
	Negative	Positive		N
	M	N	M	
Laughed	18.70	10	39.06	15
Did not laugh	11.20	17	39.50	14

Note: The feeling score ranges from 6 (very bad) to 42 (very good).

was also highly significant ($F = 9.65$, $df = 1/52$, $p < .003$) in that laughter was associated with affective state only in the negative evaluation condition.

3. *Supplementary Findings*

It is becoming increasingly clear that the more the stimuli deal with the information relevant to the subject himself, the greater their affective properties (4, 5, 10, 13, 15, 16). Fortunately, the present study allowed an additional assessment of this proposition. When the adjectives were presented as evaluations of the subjects themselves, they felt very bad ($M = 11.20$) and very good ($M = 39.50$) in response to the negative and positive personal evaluations, respectively. The negative and positive evaluations of a fellow student, on the other hand, did not evoke very strong negative ($M = 14.18$) and positive ($M = 35.18$) feelings in the subjects, as would be the implication of an affective interpretation of the present manipulation. In a 2 (personal *vs.* other evaluations) \times 2 (positive *vs.* negative evaluations) analysis of variance test, there was a highly significant interaction effect ($F = 6.19$, $df = 1/47$, $p < .01$), indicating that personal evaluations induced a more extreme affective state than did the other person evaluations.

D. DISCUSSION

Results of the present study suggest that affective arousal engendered by personal evaluation made the subjects laugh. When the same uniformly positive or uniformly negative adjectives were presented as evaluations of an unknown person by another unknown person, subjects did not exhibit any sign of laughter. If the adjectives are said to apply to the subjects themselves, however, approximately half of the subjects laughed. This suggests that subjects laughed not because of the *incredibility* of the evaluations but because of their own affective involvement. That subjects did not laugh after reading the evaluations of a fellow student is contrary to the implication of the *incredibility* explanation. Of the two reasons suggested for the laughter provoked by personal evaluations, the affective arousal explanation thus seems to be borne out by the present data.

Berlyne (3) has classified all of the available explanations for laughter into one of the three broad categories—superiority theories, conflict theories, and relief theories. Only the conflict and relief theories are important for the present purpose. One of the conflict theories (17, p. 70) postulates that "laughter occurs when a total situation causes surprise, shock, or alarm, and at the same time induces an antagonistic attitude of playfulness or indifference."

Although it is quite possible that extremely positive personal evaluations surprised the subjects and extremely negative personal evaluations shocked them, it is not clear how personal evaluations induced an attitude of playfulness or indifference in this serious experiment. The Gregory version (11) of the relief theory provides an alternative interpretation. He notes that relief is the factor common to all sorts of laughter. Relief from pain and relief from tension caused by too much pleasure both provoke laughter. As the positive and negative evaluations evoked laughter in a similar manner, it is probable that laughter followed the relief from their respective effects on the subjects' affective state. Comparison of the mean feeling scores of subjects who received positive evaluations ($M = 39.06$) with those who received negative evaluations ($M = 18.70$), however, discloses that laughter did not neutralize the effect of personal evaluations completely. It is, therefore, our interpretation that laughter does not necessarily follow relief from emotional condition, but is probably used as a defense mechanism to secure relief from too much affective arousal.

With regard to the influence of laughter on personal feelings, it can be said that laughter mitigated the effect of negative personal evaluation considerably. Subjects who laughed after the exposure to the negative personal evaluations in general felt less uncomfortable than those who did not laugh at all. The failure of laughter to alter the judgments of positive feelings is, however, intriguing. If any overt behavior, such as laughter, has a simple affect-neutralizing function (8), both the pleasant and unpleasant affective states should have been moderated. Results, on the contrary, show that laughter operated in an interactive way with personal evaluations. Perhaps laughter is used to lessen the magnitude of negative feelings and to maintain the level of positive feelings.

It should be mentioned that the evaluations of an unknown fellow student by another fellow student also influenced the feelings of the subjects, probably because of the information that the evaluations were made on the basis of the attitudes of the target person. However, it is not possible to say whether this trend is limited to the present sample of American students or is generalizable to the judgments of samples of other cultures.

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BIRTH PATTERNS AMONG AMERICAN ARMY OFFICERS*

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SUMMARY

An analysis of the birthdates of 12,000 army officers taken from the *USA Army Register, 1972* (14) shows a distribution very similar to the "M" shaped curve peaking in summer and autumn previously described for British army officers. A comparison of the birth patterns of male and female officers shows a number of similarities, but also some differences, perhaps reflecting their differing involvement as army officers. It is suggested that among the numerous factors likely to contribute to the patterns described, climatic, and perhaps also endogenous, variables are likely to be important.

A. INTRODUCTION

Recent research has indicated that a number of individual characteristics appear to be related to time of birth or time of conception. Orme (11) found that the highly intelligent are more likely to have been conceived during the winter, and the mentally retarded, the summer. This is supported by the work of McNeill, Raff, and Cromwell (10) who also showed that the hot summer months of July and August appear to be implicated in a number of disorders including schizophrenia, manic depression, and instability. A major study of the relationships between date of birth and proneness to disease has been undertaken by Tromp (13) who reported that schizophrenia, cancer, diabetes, and suicide all show seasonal patterns. Interestingly, he brings together evidence to demonstrate an inverse pattern for some diseases as between the northern and southern hemispheres.

In previous papers (4, 5) we have argued that in the study of seasonality, occupational choice has a number of advantages as the dependent variable. It is an obvious feature of human behavior which can be recorded accurately, and there are a number of biographical reference works which give both occupation and date of birth. The use of published material makes the studies simple and replicable.

So far we have categorized some 35,500 birthdates and have found signifi-

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cant deviations from the general population birth pattern for nine out of the 15 occupations studied. Different occupations tended to peak at different times; thus army officers, lawyers, and doctors tended to be born predominantly in the summer and autumn, artists in the spring, and musicians, the winter.

These data have been obtained mainly from British reference books. There is clearly a need for replicatory studies among other populations, and in this paper we report the distribution of births among American army officers as recorded in the *USA Army Register* (14).

B. METHOD

A sample of 12,000 birthdates was randomly selected from the total of some 90,000 in the *USA Army Register*, 1972 (14). All female officers identifiable by forename ($n = 1527$) were extracted to see if the patterns for men and women were similar.

As in the previous studies, birthdates were assigned to one of 12 categories formed by dividing each of the four seasons into early, middle, and late periods. Thus the early spring period extended from 21 March to 19 April inclusive, the middle spring period from 20 April to 20 May, and the late spring period from 21 May to 21 June. The sample of 12,000 has also been analyzed by day of birth to see if any differences were being masked by the seasonal grouping.

The general population birth pattern was estimated as described in Cooper (4). This makes use of British data, but, as Huntington (9) has shown, the birth curve—with a peak in the spring and a trough in the autumn—is similar in North America. Our research (5) has shown that the pattern has been relatively constant in England and Wales over the past 100 years.

In the present study, data have been graphed and deviations from the estimated general population distribution tested for significance by χ^2 .

C. RESULTS

In Table 1 the distribution of birthdates for men and women from the *USA Army Register*, 1972 (14), are shown together with a sample of 12,000 British army officers taken from the Army List of 1909 (1); more recent Army lists do not include birthdates of serving officers. In each case a large value for χ^2 was obtained, indicating that the deviations are unlikely to have occurred by chance.

The striking similarity of the patterns of birthdates among the British and American male samples is brought out in Figure 1. In both cases we get an "M" shaped curve with peaks in the summer and autumn. In both cases too,

TABLE 1
ARMY OFFICERS' BIRTHDATES BY SEASON

Season	U.K., 1909				U.S.A., 1972				U.S.A., 1972 female			
	O	E	Differ- ence		O	E	Differ- ence		O	E	Differ- ence	
			+	-			+	-			+	-
Spring												
Early	1084	1033	51		952	1033		81	134	131	3	
Middle	965	1067		102	889	1067		178	100	137		37
Late	1002	1134		132	966	1134		168	113	143		30
Summer												
Early	968	1017		49	1087	1017	70		146	130	16	
Middle	1060	1017	43		1112	1017	95		148	130	18	
Late	1153	1017	136		1102	1017	85		156	130	26	
Autumn												
Early	1001	967	34		997	967	30		113	123		10
Middle	1076	933	143		1071	933	138		121	118	3	
Late	917	883	34		925	883	42		107	113		6
Winter												
Early	883	983		100	942	983		41	110	125		15
Middle	931	983		52	1044	983	61		153	125	28	
Late	960	966		6	913	966		53	126	122	4	
Totals	12000	12000	441		12000	12000	521	521	1527	1527	98	98
χ^2	88.7 (11 df)				116.2 (11 df)				30.8 (11 df)			
	$p < .001$				$p < .001$				$p < .01$			

Note: In column headings, O = observed; and E = expected.

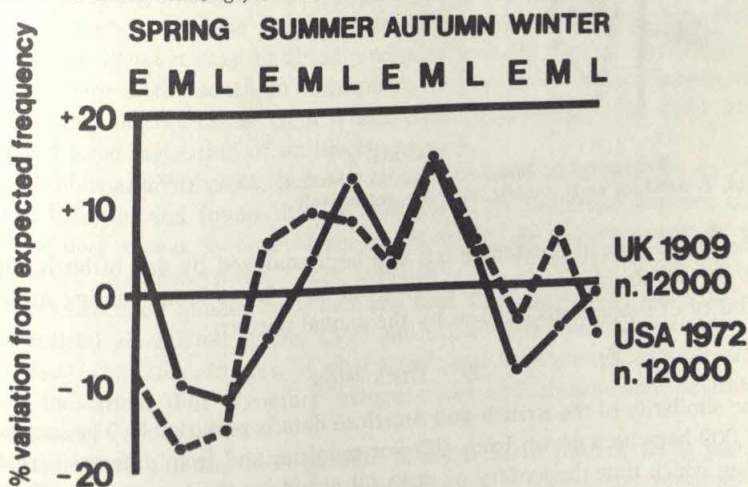


FIGURE 1
ARMY OFFICERS' BIRTHDATES IN THE U.S.A. AND UNITED KINGDOM
E, M, L stand for early, middle, and late, respectively.

there is a smaller secondary peak, but for the British sample this occurs in early spring and for the American sample mid-winter.

The birth patterns of male and female officers are compared in Figure 2. Again there is a peak in the summer among the female officers, but the autumn one is missing, and the mid-winter one emphasized. Many of the female officers were in the nursing corps.

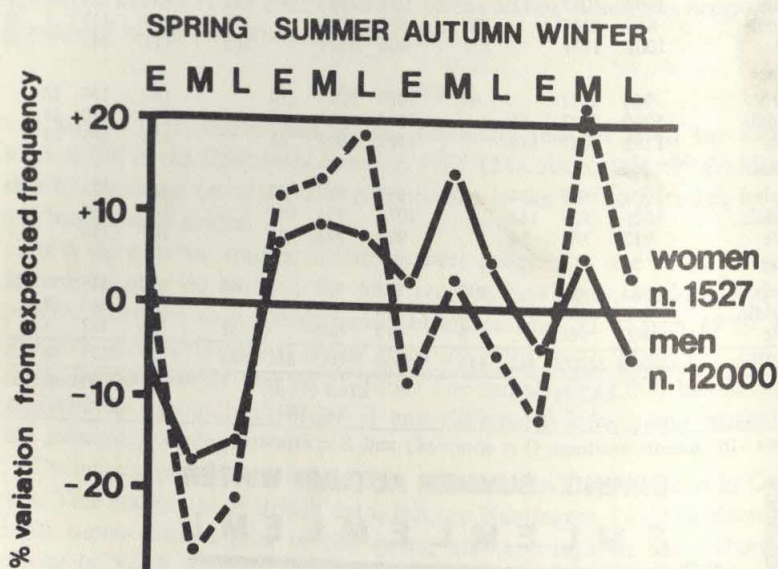


FIGURE 2
BIRTHDATES OF MALE AND FEMALE AMERICAN ARMY OFFICERS
E, M, L stand for early, middle, and late, respectively.

The distribution of birthdates has also been analyzed by day of birth, and short periods deviant to the monthly trend have been found hinting at the possibility of subpatterns masked by the annual pattern.

D. DISCUSSION

The similarity of the British and American data is remarkable. The samples of 12,000 have been drawn from different countries and from different periods (during which time the variety of tasks subsumed by the term "army officer" will have changed considerably); yet the curves are almost identical.

Scattered through the literature there are other reports of a relationship

between occupation and season of birth (e.g., 7); but since most of these studies have been inspired by astrology they are treated with extreme scepticism. Zinner (16, p. 81) in disposing of such superstition has argued that "If really large numbers of examples are taken we find that the frequency of births is fairly equal throughout the year without special preference for any given month. It is entirely different with the natural laws where the curve becomes more pronounced the greater number of cases observed." We are here reporting results for two samples of 12,000 and have obtained similar patterns among samples of army officers drawn from *Who's Who* (4) and retired army officers drawn from the Army List of 1968 (2, 5).

Since a complex web of interacting factors operating over a long period contributes to the occupation a person chooses, or ends up in (3), it will not be easy to explain the apparent relationship with date of birth. And further, although the dependent variable, occupation—in this case, army officer—is superficially clear-cut, it often embraces a wide range of activities. Perhaps the somewhat different patterns found for men and women can be accounted for in this way.

In seeking to explain the data, it may be convenient to distinguish environmental or situational influences from those arising within the person.

The differences between hot and cold months reported by Orme (11) and McNeill, Raff, and Cromwell (10), and the northern and southern hemispheres (13) suggests that the dominant variables may be climatic. We, ourselves, have not found it easy to obtain access to large samples of the birthdates of those born in the southern hemisphere, but on a very small sample of only 259 army officers taken from *Who's Who in Australia*, 1965 (15) we have found some suggestion of an inverse pattern.

Robbins, DeWalt, and Peltó (12) have reviewed the evidence on climate and behavior and found that, in addition to the effects of ambient climate, there does appear to be evidence of effects of the climate operating at the time of birth/conception. They conclude that "climatic factors may have direct effects on human behaviour and that anthropologists (and other social scientists) should not ignore these and other environmental variables" (12, p. 342). Curiously, in view of what astrologers have always maintained, there are indications that planetary configurations and climate may be linked in some way (8).

As well as climate, it is possible that the birth pattern for a particular occupation is affected by other environmental or situational variables—e.g., the age of entering schooling—but it is also possible that some kind of endogenous rhythm or rhythms operating through individual characteristics is/

are involved. Biologists are increasingly discovering the extent to which our lives are governed by circadian rhythms, or rhythms of longer cycle.

In this paper we have been concerned to establish that seasonal patterns in birthdates do exist. Whatever the explanation—and it is unlikely to be simple—we would contend that there is here a phenomenon worthy of consideration.

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TERRITORIALITY AND PRIVACY IN MARRIED AND UNMARRIED COHABITING COUPLES*¹

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SUMMARY

Territoriality and having a place within the residence for being alone were studied among coresiding married and unmarried couples. It was assumed that commitment to a long-term relationship is necessary before a coresiding couple develops territoriality. Hence, married couples were predicted to have greater territoriality than unmarried couples. It was further assumed that cohabiting individuals would need backstage regions and symbols of separateness and that American marriage norms oppose physical separateness for married persons. Hence, it was predicted that unmarried persons would be more likely to have places within the residence for being alone. Both predictions were supported. Additional analyses are reported comparing married persons with and without a history of premarital cohabitation. These analyses suggest that couples who cohabited premaritally retained a comparatively low level of territoriality after marrying.

A. INTRODUCTION

In accordance with Altman (1, p. 8) human territoriality is defined here as temporally durable preventive and reactive behaviors defending places and objects against use by others. Territoriality is one preventive or reactive adaptation of humans to the stresses, frustrations, and inconveniences of living together. If two people living together are territorial about such things as chairs and closet space, then petty disputes and frustrations over intrusions may be reduced. For example, instead of having clothes displaced or disarrayed, a couple who is territorial about clothing storage minimizes friction over displacement and disarray simply because there is less opportunity for one of them to move, handle, or otherwise manipulate the stored clothing of the other.

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Some patterning in relationships may stem from simple, powerful factors, such as differences in assertiveness or personal tempo. These patterns could develop without verbal agreements. However, in the case of territoriality in a long-term relationship, much of what is required seems too complicated to go un verbalized. Some of the time one person will be absent or delayed entering the residence. What is to keep the other from invading his or her territory? In dividing space such as closets, dresser drawers, and bathroom storage areas, it seems necessary that both persons perceive and accept the division. It is unlikely that this could be accomplished without verbal agreement. It is not merely a case of one person moving faster than the other; it is a case of both persons acting on a division of space and both behaving without error. The faster person may get things into the left side of the closet first, but he or she cannot maintain that arrangement without perception of the arrangement and acceptance of it by the other person. Therefore, we assume that territorialization usually requires some sort of overt, verbalized agreement by a couple. But to come to such a verbal agreement may be threatening for people in some kinds of relationships.

To adopt territoriality is to affirm that there is a commitment to a comparatively long term relationship. Unmarried cohabiting people, particularly college men, are likely to be uncommitted to a long term relationship (7, 8). Hence, to go through the effort of arranging a territorial division could be a threatening escalation of commitment.

At the same time that cohabitation without marriage works against territoriality, it produces some need for separateness. Macklin (8) has shown that such separateness exists for university students in Ithaca, New York, in the form of maintaining rights to a residence other than the residence of cohabitation. But Ithaca may be unusual in that so many unmarried students commit themselves to dormitory contracts at the beginning of a school year. Whether or not an unmarried cohabiting person maintains rights to another residence, a place of separateness seems necessary within the residence of cohabitation. Such separateness may be useful in helping people who are not as committed to each other as people get to be in marriage to maintain a backstage, in Goffman's (5) sense of the word, in which to relax from the pressures of performing. Particularly for college women, who according to Lyness, Lipetz, and Davis (7) may be seeking to increase an interest in marriage of a male companion who appears to be relatively uninterested, a backstage area within the residence may be desirable.

Another reason for predicting that unmarried persons would be more likely to have a place for being alone arises from speculation about marriage ideology

in the United States. In the United States marriage seems, in the popular view, to be a relationship of togetherness. Married couples are expected to spend a large proportion of their leisure time together. To the extent that nothing defined as work is done at home it would therefore seem illegitimate, by American marriage norms, for either person in a married couple to be recognized as having a place at home for being alone.

The first data analyses reported here probe the conjectures that unmarried cohabiting couples are less territorial than married cohabiting couples but are more likely to have a place within the residence where they can be alone.

B. METHOD

1. *Sample*

The total sample consisted of 20 unmarried cohabiting respondents and 70 married cohabiting respondents. Thirty-eight respondents (14 unmarried) were obtained from classes or through students and colleagues at the University of Minnesota, 31 (three unmarried) were obtained at the zoo in St. Paul, Minnesota, on a bright July day, and 21 (three unmarried) were obtained on the beaches of North Carolina in August. The average age of respondents was 23.9 (range 19 to 40); 46% were male. In the total sample, being married is not significantly related to student status, sex, age, number of other people residing with the couple, or number of rooms in the residence.

Haphazard sampling, of course, creates problems of generalizability; but systematic sampling, especially away from college populations, seems difficult in the area of cohabitation. The incidence of nonmarital cohabitation is difficult to estimate, but it probably is not high. If it is as high as 3% of the households containing an adult male-female pair, we would have had to visit more than 667 households in a random sample in order to obtain 20 unmarried cohabiting couples. That would be prohibitively expensive in an exploratory study such as this one. Given the findings of the present study, however, it now may be more worthwhile to do a study of cohabitation with standard sampling procedures.

2. *Administration of the Instrument*

The questionnaire was not forced on respondents. They were told that they need not participate and could stop participating at any time. Respondents did not identify themselves on the questionnaire and were assured that, to protect their privacy, no specific questionnaire would be discussed in reports of the research. Respondents were, however, invited to fill out and detach a page of the questionnaire if they wanted a report of the findings of the research.

3. *The Instrument*

The questionnaire asked about territoriality, age, sex, marital status, duration of coresidence and, if applicable, of marriage, number of rooms in residence, number of other persons living in residence, bathroom privacy, arguing over territory, whether the respondent or the respondent's partner were students, whether either or both had a paying job that required some work at home, amount of school work or job-relevant work done at home, intrusion from relatives and friends, availability of a place for being alone, estimated differences in neatness between the two, privacy maintaining activities with regard to windows and telephones, self-description of personal organization and neatness, number of siblings and history of shared sleeping with siblings, and ownership or leasing arrangements with regard to the residence.

The measure of territoriality consisted of five questions:

Do you have your own separate bed (a bed that both of you recognize is yours to sleep in) or side of the bed?

Do you have a certain and separate area of the closet in which you store your things?

Do you have certain and separate drawers of a dresser or chest in which you store your things?

Do you have a certain and separate portion of the bathroom to place such items as your toothbrush?

Do you have a certain and separate chair to sit in at the dinner table?

These items are presumed to come from a universe that also includes territoriality in use of desks, easy chairs, eating utensils, glassware, bookshelves, towel bars, toiletries, and parking places.

For the five-item measure, the Kuder-Richardson formula 20 coefficient is .59. Convergent and discriminant validity analysis of individual items was done in the spirit of Campbell and Fiske (4). The analysis involved the five items of the territoriality scale, and seven measures potentially confusable with them, individual items that measure having an area for being alone, whether relatives or friends invade privacy, openness to bathroom intrusion by one's mate, whether the phone is always answered when it rings, whether windows are covered at bedtime, number of hours per week someone is working at home, and a two-item measure of personal organization. The 10 relationships among the five territoriality items are all positive, and by chi square with continuity correction, six are significant. Of the 35 relationships between the five territoriality items and the seven other measures in the analysis, none is significant. Thus, the territoriality scale seems to have a respectable amount of convergent and discriminant validity.

In the report of results that follows, product-moment correlations are used, even for such dichotomous variables as whether or not a couple is married. The product-moment correlation is an index of degree of relationship that can be applied to any pair of ordered covariates. In addition, it makes possible factor analytic and partial correlation techniques. However, significance tests of the product-moment correlation are sometimes inappropriate with dichotomous variables; hence, where there is a dichotomous covariate we have also done chi square analyses of the relationships. All relationships that are reported here as significant by product-moment correlation are significant by chi square.

C. RESULTS: MARRIED-UNMARRIED COMPARISON

Married couples were significantly more territorial than unmarried couples ($r = .30$, $N = 90$, $p < .01$). Unmarried cohabiting respondents were significantly more likely than married cohabiting respondents to say that they had an area within the residence for being alone ($r = .44$, $N = 90$, $p < .001$). Thus, both predictions are supported.

1. *Alternative Interpretations of the Territoriality Findings*

One could argue that unmarried cohabiting people have fewer possessions. For example, they lack wedding gifts. Moreover, as Macklin (8) suggests, they are more likely to maintain rights to another residence and, presumably, to keep possessions there as well. However, these differences seem unlikely to end the day-to-day friction of living together. In the absence of territoriality, clothing may still be mussed by one's mate, disputes may arise over sleeping, over seating at a meal, or over the location of toiletries.

a. Stodginess. One could argue that to establish territoriality and to be so pressed by togetherness norms as not to establish a place for being alone are stodgy or conventional things. Such stodginess or conventionality might be rejected by people who are so untraditional that they would live together without marriage. The measure of personal organization derived from the items "I am a well-organized person" and "I make lists of things for me to do" might be an indication of stodginess or conventionality. On that measure unmarried respondents actually score higher than married ones, though not significantly so. Thus, the data for the organization indicator of stodginess or conventionality are not supportive of the stodginess or conventionality interpretation of the territoriality difference between married and unmarried person. Data from other possible indicators of stodginess or conventionality (covering windows at bedtime, answering the phone whenever it rings, and

extent of commitment to a residence in terms of lease duration or ownership) fail to differentiate married from unmarried respondents. Nonetheless, it remains possible that some aspect of stodginess or conventionality that was not tapped in this study is responsible for the difference between married and unmarried cohabiting couples in territoriality and privacy-seeking.

b. Duration of Coresidence. There is a difference between married and unmarried respondents that might be related to a plausible alternative interpretation of the territoriality findings. Married respondents had lived together significantly longer than unmarried respondents ($r = .39$, $N = 90$, $p < .001$). Brewer, Campbell, and Crano (3) recommend using a test for a single-factor solution (6, p. 122) to determine whether it is legitimate to use partial correlation in hypothesis-testing research. In accordance with their suggestion, a single-factor solution was applied to a matrix of correlations involving the marriage variable, duration of coresidence, and territoriality. From the test for single factoredness, it was determined that partial correlation is not legitimate in this case.

Although removal of the variable of duration of coresidence through partial correlation would leave a significant correlation between marriage and territoriality, the single-factor test indicates that the measure of marriage is not separable through partial correlation from duration of coresidence. Thus, it is possible that unmarried cohabiting couples are less territorial merely because they have been living together for a shorter duration. However, the mean duration of cohabitation for unmarried couples in the sample is seven months. Only one couple reported cohabiting a month or less. It seems to us that it is implausible to argue that the unmarried couples simply have not had the time to organize territory.

2. *Alternative Interpretation of the Privacy Finding*

In examining alternative interpretations of the relationship between being married and having a place within the residence for being alone, duration of coresidence is, as it was for territoriality, a potentially troublesome factor. In this case, however, a single factor solution does not fit the matrix of correlations among the marriage variable, duration of cohabitation, and having a place for being alone. Consequently, partial correlation is legitimate. When duration of coresidence is partialled out of the relationship between being married and having a place for being alone, the relationship persists (partial $r = .44$, $df = 86$).

We had thought it possible that the relation of privacy to marriage might represent bathroom prudery, especially since, in the total sample, unmarried

persons score significantly lower than married persons on a combined measure of willingness to let mate into the bathroom while ego is bathing and while ego is attending to a bodily function ($r = .28$, $N = 89$, $p < .01$). However, the difference disappears when the effect of differences in having other people living with the couple is removed. When data only for married and unmarried respondents living without third parties present are examined, marriage is unrelated to bathroom openness. This is plausible, since the third parties living with unmarried cohabiting couples are more likely to be unrelated adults. It may be that the bathroom is often the place for unmarried cohabiting persons to be alone, but bathroom prudery does not seem to underlie the privacy-seeking.

3. *Relationship Between Privacy and Territoriality*

Having a place to be alone may be a partial functional alternative to territoriality or, in the minds of some scholars, a form of territoriality. It may, like territoriality, reduce frustrations stemming from contact, though it may also create tensions through the frustration of dispositions to interact or to enter the space the other person is occupying. Whether it is or is not in some sense a form of territoriality is not argued here; however, the territoriality measure and the item measuring a place for being alone are negatively, though not significantly, correlated ($r = -.14$).

D. MARRIED COUPLES AND PREMARITAL CORESIDENCE

The findings from the comparison of unmarried and married cohabiting persons suggests an interesting question. If two people coreside without marriage and subsequently marry, will they continue to arrange territory and privacy as they did before marriage, or will they become more like married couples? On the one hand, it could be argued that marriage will remove pressures against commitment and in favor of separateness and thereby enable a couple to move toward the normal married state in the areas of territoriality and privacy. On the other hand, it could be argued that a couple would persist in its adaptations acquired before marriage. If this were so, then couples who coresided before marriage might be less territorial and be more likely to have space for privacy than couples who married without having previously coresided. In the sample of married couples there are 13 respondents who report coresidence with spouse before marriage. The range of coresidence before marriage in this group is one to 26 months with an average of 12 months. Of course the sample of married couples is small and unrepresentative, but the findings obtained from it seem too interesting not to report.

To evaluate the effects of coresidence before marriage, two sets of analyses were done comparing couples who had coresided before marriage with couples who had not coresided before marriage. Both analyses involved matching. In one analysis couples were matched for duration of coresidence. In the other analysis they were matched for duration of marriage. Additionally, in both analyses matching was done for age, sex, number of rooms in current residence, and whether the couple was now living alone or with others. In order to match well on duration of coresidence, one of the 13 respondents who had coresided before marriage was dropped. In order to match well on duration of marriage, four of the 13 respondents who had coresided before marriage had to be dropped.

Matching data either for duration of marriage or for duration of coresidence showed that persons who coresided before marriage were significantly less territorial than persons who did not coreside before marriage. For the former comparison, $t = 2.95$, $df = 23$, $p < .01$; for the latter comparison, $t = 2.21$, $df = 17$, $p < .05$. However, in neither set of comparisons did couples who coresided before marriage differ significantly from couples who did not in having a separate area of the residence for being alone. It appears that territoriality patterns persisted into marriage, but, at least in these data where statistical power is not great, maintenance of a separate area of the residence for being alone did not.

E. DISCUSSION AND CONCLUSIONS

1. Cohabitation

One contribution of this paper is to document differences between married and unmarried cohabiting couples in privacy and territoriality. Unmarried couples differed from married couples in being more likely to have a place for being alone. In addition, there is evidence of low statistical power that married couples who had cohabited before marriage did not differ from other married couples in having a place for being alone. Apparently, unmarried cohabitation is not an accurate portent of what a married relationship would be like. Thus, couples who hope that unmarried cohabitation will give them an accurate idea of what marriage with each other would be like may draw incorrect conclusions in the area of privacy. In territoriality, couples who had cohabited before marriage were less territorial than other married couples. This suggests either that people who cohabit are different on some aspect of conventionality or stodginess not tapped by our measures or that unmarried cohabitation produces adaptations to territorial problems other than (or in addition to) territoriality as we have defined it. One possible adaptation is an increased

tolerance for territorial invasion. Another possible adaptation is the establishment of tacit or verbalized rules governing mutual use of territory. Such rules might resemble the following: The first person to bed or to the dinner table may choose whatever locus he or she desires. The organization of the clothes in the closet is by type of garment, not by wearer, with coats together at one place, shirts and blouses together at another place, and so on. Things in the bathroom are organized by type or by size rather than by user.

2. Territoriality

Territoriality seems, from the data reported here, to be an adaptation that requires commitment to future cohabitation. Undoubtedly the amount of anticipated cohabitation that is necessary for the development of territoriality will expand or contract depending on such factors as the degree to which people are confined to a territory, the space available, or their compatibility (cf. 2). It may be that couples who do not develop much territoriality do not experience much difficulty simply because without commitment to a long term relationship any instance of friction has less significance. However, it may be that poor development of territoriality is often a source of problems, and that for unmarried cohabiting couples it may even be a significant source of estrangement.

3. Privacy

We believe that the greater privacy-seeking of unmarried cohabiting individuals is due to some combination of need for a backstage area, need for symbols of separateness and relative freedom from togetherness pressures. The lack of difference between married respondents who had cohabited with spouse before marriage and those who had not suggests that all three factors could be operating.

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ADEQUACY OF COMPENSATION, WORTHINESS OF RECIPIENT,
AND THEIR EFFECTS ON TRANSGRESSOR
COMPLIANCE TO RENDER AID*^{1,2}

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SUMMARY

The present study investigated the effects of adequacy of compensation and worthiness of recipient (as to compensation) on the willingness of transgressing subjects to make restitution. As expected, the victim received more adequate compensation than the other two less worthy recipients. However, there were no differences across recipient conditions when compensation was inadequate. The expectation that the victim would receive more compensation when compensation was adequate than when inadequate was not supported, nor was the hypothesis that the nonvictim recipient would receive more inadequate compensation than the victim surrogate recipient. Some questions are raised concerning the conceptual validity of the "inadequate compensation" manipulation. Additional questions are posed regarding the comparability of the present study to other experiments dealing with problems of transgression.

A. INTRODUCTION

Walster, Berscheid, and Walster (3) state that the more a perpetrator believes that he can restore equity through a sufficient amount of compensation, the more probable it is that he will offer that amount to the victim. The same authors also propose that an insufficient amount of available compensation will inhibit restitutive behavior. Some support for this assumption was found in a study by Berscheid and Walster (1) in which members of a women's church group in the United States were induced to cheat

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² The services of experimental assistants Alice Gray, Michele Green, Catherine Hagan, Shirley Jarriel, Michele Johnson, and Kim Limardo are gratefully acknowledged.

³ Requests for reprints should be sent to the first author at the address shown at the end of the article.

fellow parishioners out of trading stamps. Subjects were more likely to compensate their victims when the available means of compensation were neither insufficient nor excessive.

It would seem reasonable to state that two variables mediate the effectiveness of compensation as a means of restoring equity. First, the compensation itself should be adequate, and second, the potential recipient of such compensation must be deserving of it. In short, it would appear that compensation is adequate or inadequate primarily with respect to the *victim*, who, after all, is the party whose *outcomes* have been reduced through transgression. We could conceivably imagine a situation in which the perpetrator is physically incapable of compensating the victim, but instead is confronted with a potential recipient who is less worthy of aid than the victim. The perpetrator should be least willing to compensate a totally unworthy (*nonvictim*) recipient, and somewhat less reluctant to compensate an associated (*surrogate*) recipient, whose interests in receiving compensation are related to those of the victim. We could assume, then, that given adequate compensation, a transgressor will show more compensatory behavior, the greater the worthiness of the potential recipient of aid.

On the other hand, we could expect that, given inadequate compensation, the perpetrator would be most reluctant to compensate the victim, and less reluctant to compensate the less worthy recipients. The rationale for this assumption is that the tendering of inadequate compensation to the victim does not restore equity, and, indeed, could be taken as adding "insult to injury," thereby increasing inequity, as well as the perpetrator's feelings of guilt. Thus, inadequate means of compensation should *inhibit* aid giving with respect to the victim, but not with respect to less worthy recipients.

The following hypotheses would seem reasonable in light of the present discussion: that greater aid will be given the victim when compensation is adequate than when it is inadequate, and that greater aid will be given a recipient when he is a *surrogate* (whose interests are related to the victim's) than when he is a *nonvictim* (whose interests are unrelated to the victim's). On the basis of these two hypotheses, we could also expect that the victim will receive the most compensation, the surrogate the next most, and the nonvictim the least, when compensation is adequate; when compensation is inadequate, the order of recipients with respect to aid given should be the reverse.

Mention should also be made of a study by Freedman, Wallington, and Bless (2), which found that Ss tended to render more (but not significantly more) compensation to a nonvictim or victim-surrogate recipient than to the

victim himself. Although these results are contrary to the hypotheses advanced in the present study, it can be argued that Ss in Freedman's study, being unable to leave the scene of the contrived "accident," were in a situation maximally conducive to fear of discovery by the victim. It would not be inconceivable that these Ss were inhibited from aiding the victim, insofar as circumstances surrounding the transgression were fear-evoking.

B. METHOD

1. *Subjects and Design*

Sixty females enrolled in various sections of introductory psychology courses at the University of Georgia participated in the experiment in partial fulfillment of the experimental credit portion of these courses. A 2×3 factorial design was employed, with two factors: Compensation (High/Low), and Recipient (Victim/Surrogate/Nonvictim). There were 10 subjects independently assigned to each of the six conditions.

2. *Materials*

The basic materials for the contrived accident consisted of about 600 punched IBM cards which were neatly stacked at one corner of a table, which was so inherently unstable that the slightest pressure applied to it was sufficient to spill all of the cards on the floor.

3. *General Procedure*

To allay suspicion, the experiment was presented to S as one dealing with "aesthetic preferences." On arrival, she was met by the experimenter, who apologetically stated that it would take "a minute or so" to get the magazine of a projector "recycled" for the aesthetic preference task. The experimenter then asked S if she would mind waiting in "Ed Ritter's temporary office." It was made clear that Ritter was a graduate student currently engaged in a study of voting behavior, and that he was using the small office to store and compile data. When S was ushered into the room, she seated herself at the table opposite a confederate. As soon as she touched the table or leaned on it, the cards spilled onto the floor. The confederate's job was to help S restack the cards, and to point out a note, signed by the victim, which asked that the cards not be disturbed.

Shortly after the accident, the subject was escorted to the experimental room where the bogus task was carried out, but interrupted by a phone call shortly before its termination.

a. *Reciprocity.* The experimenter mentioned that the call was from either

(a) the victim, (b) another student working with the victim (*surrogate recipient*), or (c) another student, no mention being made of the victim's name (*nonvictim recipient*).

b. *Compensation*. It was further mentioned that the caller needed either (a) 100 circulars folded, put into envelopes, and addressed (*high compensation condition*), or (b) a few circulars dropped off in a nearby mailbox (*low compensation condition*).

c. *Behavioral measure of helping*. The main dependent variable was a simple dichotomous measure of whether *S* agreed or refused to help the recipient.

As soon as *S* had indicated her willingness or unwillingness to help the recipient, the experimenter pointed out that the study concerned itself with the table and cards, not the "aesthetic preference" task, and that he was really concerned with how knocking the cards over affected her willingness to do a favor. In keeping with ethics, *S* was thoroughly debriefed as to the reason and purpose of the deception.

4. *Validation of Compensation*

Twenty-eight independent judges were given questionnaires presenting a general description and scenario of the accident, and were then asked to rate (7-point scale) whether the compensation (in the "high" and "low" compensation conditions, respectively) was adequate (too much/not enough).

C. RESULTS

1. *Validation Measure*

In order for the amount of compensation to be considered adequate, it should be neither excessive nor insufficient. The mean of 3.86 for the high compensation item was not significantly different from a theoretical midpoint of 4.00 ($t = -.52$, $df = 27$). The mean for the low compensation item ($\bar{X} = 2.11$ was significantly less than the same midpoint ($t = -12.69$, $df = 27$, $p < .001$), suggesting that judges did indeed perceive both compensation levels as respectively adequate and inadequate.

2. *Results Bearing on Hypotheses*

The first hypothesis calls for greater aid to the victim when compensation is adequate than when it is inadequate. Instead, nine out of 10 *Ss* in the victim/low compensation condition agreed to help, while only five of an equal number in the corresponding high compensation condition so consented.

It was also hypothesized that greater aid would be given the nonvictim recipient when compensation was inadequate than when compensation was adequate. Nine of the nonvictim/low compensation Ss agreed to help in this condition, while none agreed under the nonvictim/high compensation condition. This result, however, should be taken as artifactual, because of the universally high level of compliance in the low compensation condition, *irrespective of recipient condition*.

The third hypothesis calls for the following order of increasing aid-giving when compensation is adequate: *nonvictim-surrogate-victim*. A comparison between the victim and nonvictim recipients was significant ($p = .02$, Fisher's exact test), with none of the high compensation Ss aiding the non-victim, and five complying to render aid to the victim. Two out of 10 Ss in the surrogate recipient condition so complied.

D. DISCUSSION

There were no differences in compliance across recipient conditions in the low compensation condition; in fact, only two subjects refused to aid the recipient in this condition. Thus, the hypotheses that were generated by the assumption that inadequate compensation would *inhibit* S from complying, the more worthy the recipient, were clearly not supported. Perhaps the favor requested in the low (inadequate) compensation condition was so trifling that the issue of compensation was irrelevant to the subject. Common courtesies, such as dropping letters in mailboxes, are often performed without the thought of debit or reciprocity. So it could be that the "low compensation" condition did not involve the issue of compensation at all, but a culturally approved "good turn" that anyone would do for anyone else. Although Walster *et al.* maintained that inadequate compensation would be withheld from recipients who deserved more, they may have overlooked the notion of a "threshold" level of compensation, below which the amount tendered is not compensation at all.

A large favor, on the other hand, involves enough cost to the favor-doer to be considered a valuable service. There should be more concern for the worthiness of the potential recipient when the favor is thus commodified. The compensatory behavior of subjects in the high compensation condition is supportive of this notion. All of the subjects in the nonvictim, and half of those in the victim recipient conditions withheld aid from their prospective recipients.

Of further interest is the fact that only in the victim recipient condition were subjects heard to remark: "That's the least I can do for him." Perhaps

the potential recipient must be worthy of compensation in order for the issue of compensation to be salient.

Freedman *et al.* (2) found trends which were apparently opposite those of the present study: guilty Ss tended to help someone other than the victim himself. It was tentatively stated that the subject's inability to leave the scene of the accident in his experiment may have been conducive to a high level of fear of discovery. In the present study, by contrast, Ss only had to worry about the returning victim discovering that his cards had been upset. Thus it would seem tenable to state that they did not experience as intense fear as Freedman's. The "aesthetic preference" task in the present study seemed not only interesting to subjects, but also relaxing (many overtly said so). Subjects in Freedman's study, by contrast, could *never* be sure of whether they were safe from the potential wrath of the returning victim, so this thought could *never* be forced to the back of their minds as they took the (bogus) Remote Association Test.

In sum, Freedman's results may simply demonstrate how Ss react to victims when they are afraid of them, and the present study may show how they react when they are not afraid.

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THE EFFECT OF BEHAVIORAL CONTEXT ON INFORMATION SELECTION AND DIFFERENTIAL ACCURACY IN A PERSON PERCEPTION TASK*

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SUMMARY

The failure of earlier studies to find much evidence for differential accuracy may have been due to the methodology employed. Two modifications of the standard methodology were introduced in the present experiments: (a) the judges self-selected the information on which their judgments were based, and (b) the objective value of the information was specified. Groups of judges selected information with and without behavioral context, and received it with and without behavioral context. All groups achieved significantly greater differential accuracy than the control group. Although judges varied widely in their information preferences, the more accurate judges did not choose objectively better information. Behavioral context significantly increased accuracy only when provided during the information selection process. The second experiment replicated the major findings and further clarified the function of behavioral context. The results underline the necessity of distinguishing between objective and subjective information value. Judges are capable of differential accuracy when allowed to choose information of *value to them*. Behavioral context for the information significantly improves their choice.

A. INTRODUCTION

In the typical experiment concerned with the sources of accuracy in interpersonal perception, judges are given a set of information and asked to predict from it a wide variety of target responses. The accuracy of the judges' predictions is then partialled out into stereotype and differential accuracy components. Stereotypic accuracy reflects knowledge of the base-rates appropriate to the target sample; differential accuracy reflects the judges' ability to differentiate one target in the sample from another. The stereotype component has been found to account for a large portion (1) or nearly all (3, 5, 6) of the obtained accuracy.

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The finding that judges are essentially unable to predict accurately differences among target persons is open to question, however, despite the apparent wealth of evidence in its favor. The earlier failure to substantiate the existence of differential accuracy may have been inadvertently a function of two aspects of the standard design: the experimenters' ignorance of the cue-criterion relationships, and the experimenters' disregard of individual differences in information requirements among judges.

The experimenters have been typically unable to specify the cue-criterion relationships: viz., the relevance of the information given to the judgments required. Cline and Richards, for example, asked judges to fill out standard psychological test protocols as the target would have done. The information given the judges was filmed interviews of the targets in a supermarket. The authors were, of course, unable to specify the cue-criterion relationships in this study. In the absence of a relationship between cue and criterion, only stereotype accuracy is possible. In the absence of *evidence* for such a relationship, therefore, it is not clear whether the poor showing of differential accuracy should be attributed to the judges or to the information proffered them. One would not expect to obtain differential accuracy judgments from physicians asked to predict severity of gastric ulcer from EEG and shoe size information. Relevant information is a necessary condition for differential accuracy.

Standard procedure in accuracy studies has entailed giving all judges making the same predictions the same information. Providing judges with uniform information belies an implicit, and perhaps gratuitous, assumption that all judges construe cue-criterion relationships in the same way. Cues that are informative for the goose may be totally uninformative for the gander. In predicting the social status of a visitor, Mrs. A may wish to look at her clothes and Mrs. B to find out what clubs she belongs to, with neither lady being able to make much use of the other's information.

The difficulties mentioned above have been largely resolved in the present study. The achieved accuracy of the experimental groups is compared against the baseline stereotype accuracy of control judges asked to predict the responses of a "typical" member of the sample. Against this baseline, significant increases in achieved accuracy by the experimental groups can reasonably be attributed to differential accuracy based on a real use of the information. Differentiation among targets not warranted by the available information reduces accuracy (2). On criterion items in which both the control and experimental groups achieve high accuracy, the role of the information is moot. The criterion items were therefore selected for low stereotype accuracy.

This is analogous to the common procedure in test construction of eliminating the "too easy" items: those items everyone gets right are noninformative. (Details are given in the Method section.) Second, the cue-criterion relationships are known. For any information, its value in predicting the criterion can be specified. Finally, judges are not given uniform information. To allow for variation among persons in the construction of cue-criterion relationships, judges were allowed to self-select information from a pool.

The effect of a behavioral context for information is a major concern of this experiment. One can present judges with information on what the target said about himself in two forms: by itself, and in the context of what he might have said and didn't. Presumably, information is more meaningful in the latter case. One can make more of Mary's statement that she would probably go to the movies after a fight with her roommate if one knew that she had had available, but had not chosen, the response options of "stay and talk it out," "go to my room and sulk," "try to make up."

This study looks at how the form of information (viz., with or without context) affects the selection of information and the accuracy of prediction from the information. The relationship between the value of the information chosen and the accuracy of prediction is examined. Consensus among judges on information selection is measured. Experiment 2 attempts to answer a methodological issue raised by the first experiment and to replicate its findings.

B. EXPERIMENT 1

1. Method

a. Overview. Judges were asked to predict what a target said he would do in a given situation. They self-selected the three pieces of information, from a pool of 10, that they felt would be most helpful in making the required judgment. They were, of course, allowed to see what the required judgment (the criterion item) was before selecting the information. All judges made three judgments: one for each of three targets. Targets and criterion items are confounded in the sense that Target A's behavior was always predicted for Situation A; Target B's behavior for Situation B; etc. The conditions under which judges selected information and the form in which they received information were varied. The basic dependent variables were (a) judgment accuracy, and (b) value of the information selected.

b. Form of information. The 11 information items were behavioral: they specified a situation and four possible alternative responses to that situation. A sample item is as follows:

C. H. is eating with D at an expensive restaurant. The steak he ordered rare is served well-done. D is a girlfriend C. H. knows slightly. He could (a) tell the waiter to take it back, (b) eat it and not say anything; (c) not say anything but pointedly leave the steak half-eaten; (d) not say anything to the waiter, but complain to D.

In the behavioral context form of information, the whole item was presented with the chosen alternative marked. Information without context was the stem and the alternative chosen.

c. Criterion items. The criterion items were a selected three from the pool of information items. They were the same for all groups. For any one judgment, the remaining 10 items constituted the information pool.

d. Experimental groups and control. All groups ($N = 20$) were told that the targets were male undergraduate students at the college. The control group was asked to make its predictions from this information only. Group 1 both selected information in context and received information in context. Group 2 selected information without context but received it in context. Group 3 both selected and received information without context. (Should the reader wonder about its absence, a select-with-context/receive-without group is a physical impossibility.)

e. Accuracy scores. Each judge made first and second choice predictions on each of the criterion items. Two points were given if the first choice was correct, and one point if the second choice was correct. Thus the possible range in accuracy score for a judge ranged from 0 (none correct on either first or second choice) to 6 (all three correct on the first choice). The alternative procedure of scoring only the first choice was rejected because it has the drawback of penalizing close choices about half the time.

f. Choice of criterion items as a strategy for forcing differential accuracy. The targets and criterion items are confounded in that a target's response was always predicted in the same situation (Target A in Situation A, Target B in Situation B, etc.). The target-item combinations were selected in the following way. Twenty-four male undergraduates had previously answered what they would be most likely to do in each of the 11 situations. The control judges were told the nature of the sample and asked to predict the responses of a typical member. The predictions of the control judges were the stereotype frequencies. For each item, the stereotype response frequencies were compared with the actual response frequencies. The targets were randomly chosen from that set of people whose response to an item was poorly predicted by the control group, provided the stereotype frequency was greater than zero for all alternatives. A best estimate of the actual response frequencies for the criterion items (taken from the sample of 50 used to calculate the in-

formation coefficients) was 14/50, 8/50, and 4/50. The above procedure amounts to preselecting the criterion items for difficulty in such a way that any substantial increases in accuracy of experimental groups over the control can reasonably be attributed to the available information. A second control group ($N = 20$) was used to insure that the low stereotype accuracy scores on the criterion items were not the accidental result of sampling fluctuation. The two control groups had essentially identical accuracy scores for the criterion items, $\bar{X}_1 = .6$; $\bar{X}_2 = .5$ —a glance at the range of accuracy means in the next section should suffice to convince the reader of their closeness).

g. Judging task. In all experimental groups the judges made three different predictions. For each prediction the judges were allowed two answers, the most likely and the next most likely. The standard procedure was to have them complete and turn in one judgment before receiving materials for the next. The judges were asked to rate each of the three pieces of information they selected on a 0-10 scale indicating how informative they felt it would be. The judges made these ratings both when selecting the information, and again after they had made their prediction and received feedback on the correct answer. Although only a ranking test was done on these data, the ratings were obtained as an additional check on task credibility. Many ratings in the vicinity of zero would have impugned the whole rationale of the study, by indicating that the information selection was essentially an arbitrary selection from a set of information the judges considered irrelevant or uninformative *vis-à-vis* the required judgment.

h. Information coefficients (I.C.). The I.C.s specify the cue-criterion relationships. They measure the informativeness of an information item with respect to a given criterion item. An information item (with respect to a given criterion item) may have an I.C. between zero and one. An I.C. of one indicates that knowledge of the target response on the information item enables perfect prediction on the criterion item; an I.C. of zero indicates that knowledge of the target response on the information item is no help at all in predicting to the criterion item.

The I.C.s were derived from the responses of 50 male undergraduates to all the items. They are calculated in the following way. For any item, the 50 responses are distributed across the four response categories. That item will be informative *vis-à-vis* the criterion item if those who answer it alike also tend to answer the criterion alike. Thus the issue of interest is the spread of responses on the criterion item for those subjects who chose the same response on the information item. The I.C. is a linear measure of deviation from perfectly even distribution among the criterion item response categories and is defined by Cramer's Statistic (4, p. 606). For information item X , an

I.C. is computed for alternatives A, B, C, and D. The final I.C. for item X is an average, weighted by frequency, of the I.C.s for the four alternatives:

$$I.C._X = (f_A I.C._A + f_B I.C._B + f_C I.C._C + f_D I.C._D) / (f_A + f_B + f_C + f_D).$$

i. Information value scores. These scores measure the goodness of information selected by the judges. For each of the criterion items, the 10 information item I.C.s were converted into z scores. The z score conversion allows for differences in predictability among the criterion items by measuring goodness of information selection relative to a particular criterion item. The value of the three pieces of information selected by a judge is the simple sum of their z scores.

2. Results

a. Accuracy. The mean accuracy scores for the various groups were as follows: control group $\bar{X} = .20$; group that both selected and received information with behavioral context, $\bar{X} = 1.03$; group that selected information without context but received it with context, $\bar{X} = .72$; and group that both selected and received information without context, $\bar{X} = .67$.

An ANOVA showed a significant difference between groups ($F_{3,76} = 10.16$, $p < .001$). All experimental groups obtained significantly greater accuracy than the control subjects. Group 1 is significantly more accurate than Groups 2 and 3 ($p < .025$); Groups 2 and 3 do not differ from each other. A comparison of Groups 1 and 2 tests the effect of selecting information in context; a comparison of Groups 2 and 3 tests the effect of receiving information in context. The operative variable seems to be the opportunity to select information in context.

The three criterion responses differed in the frequency with which they were actually chosen. The effect on accuracy of the "unusualness" of the criterion responses was tested by an item \times group ANOVA for the three experimental groups. An $F < 1$ indicated no difference among criterion items in the accuracy with which they were predicted.

b. Information selection. An ANOVA of the information value scores was done to see whether context aided in the selection of good information. An item \times group ANOVA indicated the experimental groups did not differ significantly with respect to how well they chose information. There was a significant difference in the value of information selected for the different criterion items ($F_{2,114} = 5.208$, $p < .01$). The reason for item differences in information selection is not clear. They may be due to some characteristic(s) of the particular item pool used in the study, or they may indicate that for some criterion behaviors, the cue-criterion relationships are better known.

c. Relationship between accuracy and information value. A tetrachoric correlation between judges' accuracy scores and information value scores, over criterion items, was essentially zero (.04). The result is the same when the data are broken down separately by groups. Though it is completely counterintuitive, the data seem to indicate no relationship between accuracy and information value.

d. Consensus on information choice. This analysis is directed to the question of whether judges tended to choose the same information. The first, second, and third information choices of each judge were compared with those of all other judges in that group for a given criterion item. For any pair of judges, the weighted (according to position of preference) sum of mutual choices was counted. For each pair, the possible score could range from 0 (no mutual choices) to 9 (all three mutual choices and in the same positions). There are 190 possible comparisons within a group for a given criterion item. The obtained total was divided by the highest possible total (190×9) to yield a consensus score between zero and 1. A consensus score of zero indicates no overlap among judges on information choice; a consensus score of one indicates perfect agreement among judges on information choice.

A consensus measure was obtained for each of the three experimental groups for each of the three criterion items. The mean consensus value over groups and criterion items was .26; the range in consensus values was from .18 to .34. There was no difference between groups in tendency to select the same information—the means of the three groups over criterion items were virtually identical. It is important to note that all consensus scores were low in an absolute sense. This supports the notion that judges differ considerably in their information preferences.

3. Discussion

This study differed from prior attempts to study the accuracy of interpersonal perception in two ways: the stereotype component was effectively removed from the accuracy score obtainable by the judges, and the judges were allowed to self-select their information. One other aspect of the information selection task should be mentioned. It was extremely involving for the judges; they thought for a long time before making selections, did not attempt to shorten their time in the experiment by rushing through the task, and often remarked spontaneously after it was over that they had found it absorbing and thought-provoking.

All experimental groups achieved significantly greater accuracy than the control (stereotype accuracy) group. This indicates that the information

items were informative to some extent, since otherwise differential accuracy would have been impossible. It also indicates that judges are capable of differential accuracy given reasonable information. One might conclude that the lack of evidence for differential accuracy in some previous studies is due simply to the fact that judges were given poor information.

The present data also suggest that uniform information is uniform only from the experimenter's point of view. The finding that the judges differed widely in their information preferences seems to indicate that information deemed helpful by one judge may be quite useless to another. Accuracy studies which present all judges with the same information, therefore, bias the outcome against differential accuracy. They are, in addition, a poorer simulation of the natural process of person perception. In everyday life, people *choose* the cues they use.

Context did not have quite the expected effect on accuracy. Receiving information in context made no difference. The crucial variable was the opportunity to select information in context. A reasonable *post-hoc* explanation for this finding is that selecting the information in context is a necessary precondition for judges to acquire the proper "set" for utilizing the context; without this set the context may well be ignored. This hypothesis is explored further in the next experiment.

Although the opportunity to select information in context augmented accuracy, it had no comparable effect on the value of the information selected. The objective information value of the items selected by the most accurate group did not differ from the information value of the items selected by the other groups. In addition, the correlation between the accuracy of a judge's prediction and the goodness of the information on which he based the prediction was essentially zero.

The paradoxical lack of relationship between accuracy and information value, if replicable, can be explained in one of two ways. The "context awareness" explanation is that, if selecting in context in fact facilitates the use of context in the information received, and if the context in fact augments the informativeness of an item, the analysis would not have reflected this, since context did not enter into the calculation of the I.C.s. This explanation is explored further in the next experiment. The alternative explanation is that, given the variation in information preferences, objective measures of information are beside the point. Information items with objective I.C.s of .98 may never be chosen or may be totally useless to judges either unattuned to the cues or unaware of their information value.

C. EXPERIMENT 2

This study was done primarily to replicate the major findings of the first experiment: the superior accuracy of judges who select in context, and the independence of information value and accuracy. In addition, there is a test of the hypothesis that selecting in context was the crucial variable because it gave judges a "set" to use the context. To explore further the relationship between information value and accuracy, a group of judges was given "best" information.

1. Procedures

There were five experimental groups of 20 judges each. All judges made first and second choice predictions on four criterion items plus an unscored sample item. The sample item was given first, followed by the criterion items in random order. Group 1 selected without context and received information in context. Group 2 had the identical procedure except they were given an additional page of instruction designed to call their attention to the significance of the context when receiving the information. The experimenter went over this sheet verbally with the subjects. The instruction sheet read as follows:

A person has answered an item like your sample item #2. There are two ways we could give you information about how he answered. We could simply tell you which alternative he chose. Another way would be to tell you not only which alternative he chose, but also the alternatives he might have chosen and didn't.

The purpose of this experiment is to compare these two ways of giving information. Your group will get information in the second way. In other words, you will be allowed to see not only the alternative a person chose, but also the range of alternatives from which he chose.

This instruction was followed by a sample item presented in both forms. Group 3 both selected and received information in context. Group 4 was given "best" information in context. "Best" information was the set of three items with the highest information value for each of the criterion items. Group 5 was identical to Group 4 except that they received the special instruction sheet designed to increase context salience (see above). For all experimental groups, feedback on the correct answer was given after each judgment.

2. Results

a. Accuracy. The obtained accuracy scores for the various groups were as follows: Control group, $\bar{X} = .29$; group that both selected and received in-

formation in context, $\bar{X} = .95$; group that selected information without context but received it with context, $\bar{X} = .45$; group that selected information without context but received it both with context and context-enhancing instructions, $\bar{X} = .50$; group that received best information, $\bar{X} = .50$; and group that received best information with context-enhancing instructions, $\bar{X} = .67$.

All groups were more significantly accurate than the control subjects ($F_{5,114} = 8.62$, $p < .001$). Multiple comparisons indicate that the group both selecting and receiving information in context was more accurate than the other experimental groups ($p < .005$). The special context instruction sheet had no effect; Groups 1 and 2 did not differ, neither did Groups 4 and 5. Neither of the best information groups was as accurate as the group that both selected and received in context. The criterion items differed significantly in the accuracy with which they were predicted. As was found in Experiment 1, the accuracy with which criterion responses were predicted seems to bear no relationship to the frequency with which they actually occur in the target population. A best estimate (from the group of 50 used to compute the I.C.s) indicates response frequencies of 2/50, 3/50, 10/50, 26/50. The corresponding accuracy sums were 28, 55, 111, 52.

b. Information value. A group by (criterion) item ANOVA of the information value scores showed no difference between items. The groups did differ significantly ($F_{2,57} = 4.44$, $p < .05$). Group 3 chose significantly worse information ($p < .05$): this was also the group with superior accuracy.

c. Relationship between accuracy and information value. The correlation (Pearson r) between judges' accuracy scores and the mean of their information value scores was essentially zero ($-.05$). The result was the same when the correlation was computed separately for each of the groups.

d. Predictability of an item and accuracy. The predictability of an item is indicated by its mean I.C. value. The criterion items in this replication were deliberately chosen to fall at the quartiles of the predictability range. The three criterion items in the first study all happen to fall in the lower half, and it was thought that perhaps this inadvertent selection may have affected the outcome. However, there seems to be no relationship between the predictability of an item and the accuracy with which judges predict to it. The criterion items had mean I.C.s of (A) .3200, (B) .4130, (C) .5012, (D) .6984. The corresponding order of accuracy scores for Groups 1, 2, and 3 is C, D, B, A; when the "best" information groups are included, the order is C, B, D, A.

3. Discussion

Clearly replicated was the superiority in judgment accuracy of the group that is allowed to select information in context. They were even more accurate than judges given far superior information (the "best" groups). It was hypothesized that the opportunity to select in context was crucial because it gave judges the "set" necessary to make use of the context in the information they received. This hypothesis received no support whatever. Instructions designed to produce the same "set" failed to have any effect on accuracy.

The lack of a relationship between accuracy and information value was also replicated. There was no correlation within judges between accuracy of prediction and the value of the information used in making that prediction. There was no relationship between the predictability of a criterion item and mean accuracy in predicting to it. Judges given the best information were less accurate than judges with inferior information. The I.C. number, as an index of informativeness, would not seem to be at fault; it is a fairly straightforward measure of the cue-criterion relationship.

Two explanations of the apparent independence of accuracy and information value were offered in the earlier experiment. The ineffectiveness of the context instructions seems to rule out the explanation that for judges who acquire a "set" to use context, the items acquire an additional informativeness that is not reflected in the I.C. number. One can only conclude that the value of information to individual judges is not well described by objective information value measures.

Good information is valueless to someone who does not know how to use it. Lay persons would probably make more accurate disease diagnoses from objectively poorer cues than from sophisticated graph readouts that they cannot decipher. The same situation evidently obtains in behavior diagnoses. The superiority of the "select in context" group must reside in the more favorable opportunity to detect information of value to them. The data seem to admit no other interpretation.

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THE ROLE OF RACIAL ATTITUDES IN HELPING BEHAVIOR*^{1,2}

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SUMMARY

Although a number of studies have demonstrated that the victim's race affects the probability that a bystander will intervene and help during an emergency, the process by which attitudes affect helping behavior is unclear. The present study suggests that attitudes toward the victim may affect helping behavior by influencing the bystander's interpretation of the degree to which help is needed. The results indicate that when a bystander was the only witness, black victims were helped as frequently as white victims. However, bystanders together with other passive witnesses were more likely to help the white victim than the black victim.

A. INTRODUCTION

A number of studies have shown that whites in America are more prone to help white victims than black victims (1, 3, 4, 7). Still problematic is the manner in which attitudes mediate helping behavior. Did people, recognizing that help was needed, consciously base their decision to grant or withhold assistance on the fact of the victim's race? If so, attitudes may *directly* influence a decision to help or not to help the victim. An alternative explanation is that an individual's attitude toward the victim may affect his perceptions of the degree to which help is needed in the situation: a person may be inclined to define the situation as one in which help is unnecessary if he has negative attitudes toward the victim.

The two processes, deciding not to help after recognizing that help is needed *vs.* deciding that help is unnecessary, are quite different. The former suggests a purposeful callousness, particularly when helping involves minimal cost to the bystander, while the latter justifies the bystander's noninvolvement. In this second interpretation, racial attitudes affect human

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functioning, indirectly, to the extent that people discriminate unwittingly. This process would facilitate the avoidance of intimate contact with blacks while permitting the bystander to believe that he did not act inappropriately.

A third possibility is that these processes are not independent of one another in terms of operating within the same feedback loop. Initially, a bystander may recognize that help is needed, but lacking the motivation to help the victim, he may reinterpret the situation as one in which help is unnecessary.

The purpose of the reported research is to evaluate the alternative explanations for the effects of racial attitudes upon helping behavior.

The investigator suspects that in "racially liberal climates" (i.e., where official norms favor nondiscrimination, yet where latent racism might exist), a prevalent mode by which attitudes toward the victim affect helping behavior is by differentially affecting the bystander's interpretation of the degree to which help is needed in a particular situation. It is expected that attitudes toward the victim play increasingly important roles in mediating helping behavior as factors in the situation more easily permit a "no help needed" interpretation.

The use of the paradigm (5) developed by Latane and Darley (i.e., permitting Ss to witness an emergency either alone or together with others) along with a manipulation of the victim's race permits an initial test of the theoretical notions regarding the manner, direct or indirect, in which racial attitudes affect overt behavior.

In the Alone condition, the only input for S is the reality of the emergency (pilot testing of the emergency has affirmed its compellingness). The lack of additional input regarding the nature of the emergency creates a situation in which it is relatively difficult to misinterpret its severity. The face-to-face Together condition, however, provides two possibly conflicting inputs: the compellingness of the emergency, and the suggestion that help is unnecessary, provided by the passivity and calmness of other bystanders. There is, thus, a greater probability that in the Together condition subjects will reach a "no help needed" conclusion. Obviously, the passivity of others may suggest other interpretations to bystanders (e.g., others recognize that help is needed but are unmotivated to help).

If attitudes *directly* mediate behavior—i.e., the bystander recognizes that help is needed yet withholds his assistance because of the victim's race—then black victims should be helped less frequently than white victims in the Alone condition and possibly in the Together condition. However, if attitudes toward the victim *indirectly* mediate behavior by differentially

affecting the bystander's definition of the situation, then (a) black victims should be helped as frequently as white victims in the Alone condition, where it is difficult to misinterpret the severity of the emergency; and (b) black victims should be helped less frequently than white victims in the Together condition, where it is relatively easier to reach a "no help needed" definition. Both the direct and indirect result patterns should be pronounced for more prejudiced Ss.

B. METHOD

Forty white females enrolled in Introductory Psychology at the University of Delaware were selected to participate in this study on the basis of their scores on an 11-item Likert format questionnaire regarding attitudes toward blacks given earlier in class. Twenty upper and 20 lower quartile scorers were selected. The 11-item scale in this study correlated highly ($r = +.83$) with what appear to be the best three subscales from Woodmansee and Cook's (10) study: "Ease of interracial contacts," "Subtle derogatory beliefs," and "Private rights."

These Ss were engaged in what was described as an Extrasensory Perception study with either one additional person (Alone condition) or four additional persons (Together condition). All other participants were actually confederates of the experimenter, posing as naive Ss. In both conditions the female victim was either black or white, and all other female confederates in the Together condition were white ($N = 3$). Subjects within the high and low prejudice scoring group were assigned randomly to each of the four treatment conditions.

As in the Latane and Rodin (6) study, Ss in the Together condition were in the face-to-face presence of other bystanders. The confederate bystanders remained calm and passive following the onset of the emergency. If questioned by the S following the emergency, these bystanders responded only by shrugging their shoulders as if they were somewhat confused but unworried.

E explained to the participants that, in the course of the ESP task, all Ss would have the opportunity to receive ESP messages (Zenner symbols) in the "receiving room" down the corridor. All participants remaining in the "sending room" would simultaneously attempt to transmit 15 messages telepathically to the receiver. After each symbol was sent, the receiver would report her judgment as to which one of five symbols was sent on that particular trial via a one-way intercom system. To increase the credibility of the situation and the S's involvement with the task, she was the first of the participants to "receive."

The receiving room was somewhat in disarray. In one corner was a stack of heavy chairs piled to the ceiling, one on top of the other. Other chairs were overturned on table tops. In the middle of the room a vacuum cleaner was clearly evident. Upon entering the receiving room, *E* exclaimed as though surprised, "I wish the janitorial staff would do this at a more convenient time." Following the *S*'s 15 trials as a receiver, she returned to the sending room, whereupon the second participant (the future victim) left for the receiving area. At this point, *E* who was believed to be waiting in the hall outside of the sending room during the ESP trials, substituted a prerecorded audio tape for the receiver's guesses. After seven ESP trials, the receiver interrupted the procedure by claiming that the stack of chairs in the corner looked as though it was about to fall, and that she had better adjust them. After about five seconds, the receiver screamed, "They're falling on me . . . (Scream) . . . (Scream) . . ." A loud crash sounded, followed by a thud, and then silence.

A helping response was scored if the *S* left the sending room within a three-minute period to assist the victim. The choice of this particular time period was based on the results of Darley and Latane (2) and other investigators who observed that people who fail to report within three minutes generally do not report at all.

C. RESULTS AND DISCUSSION

Absolutely no differences between high and low prejudiced subjects were observed on either the helping measures or on postexperimental questionnaire items dealing with the perceived seriousness of the emergency. Therefore, the results presented below have combined the data of the high and low prejudice groups. The failure to observe a relationship between a paper-and-pencil measure of prejudice and overt behavior is certainly not unique to this study (9).

An inspection of the relative frequencies with which *Ss* in the Alone and Together conditions assisted the black and white victims (see Table 1) supports the tenability of an *indirect* attitudinal process affecting overt behavior. An analysis of these data with Sutcliffe's (8) technique for partitioning chi square reveals the following information: overall, black victims were helped less frequently than white victims ($X^2 = 5.63$, 1 *df*, $p < .02$) and *Ss* in the Alone condition helped more frequently than *Ss* in the Together condition ($X^2 = 10.00$, 1 *df*, $p < .01$); the extent to which black victims were helped less frequently than white victims was greater in the Together condition than in the Alone condition ($X^2 = 5.63$, 1 *df*, $p < .02$).

TABLE 1
THE FREQUENCY OF HELPING BLACK AND WHITE VICTIMS WHEN THE BYSTANDER
IS ALONE OR TOGETHER WITH OTHER BYSTANDERS

Ss' response	Alone		Together	
	Black victim	White victim	Black victim	White victim
Frequency help ^a	10	10	3	9
Frequency no help ^a	0	0	7	1
Ss' appraisal of situation ^b	4.3	4.3	3.6	4.3
Estimate of others' appraisal ^b			1.2	2.5

^a Number of Ss in each condition.

^b Appraisal indicated on seven-point scale where 1 = not hurt at all, and 7 = hurt very seriously.

An analysis of variance on the raw latency measure similarly reflected the potency of the Alone-Together effect ($p < .001$), the race of victim effect ($p < .01$), and the resulting interaction effect ($p < .05$). In addition, the latency for intervention in the Alone condition was twice as long for the black ($\bar{X} = 16.4$ sec) than for the white ($\bar{X} = 7.8$ sec) victim ($t = 2.29$, $p < .05$). This particular finding is puzzling because it may be interpreted as supporting either the direct or indirect attitudinal process. This finding may reflect a direct purposeful reluctance to help black victims. On the other hand, if a person is inclined to accept "no help needed" interpretations more readily for black than for white victims, it may require more information or more time to recognize the necessity for help when the victim is black.

In the postexperimental interview Ss were asked to indicate on a seven-point scale how seriously they believed the receiver to be injured (1 = not hurt at all, 7 = hurt very seriously). These results (see Table 1) did not support the prediction that Ss would perceive that the black victim was hurt less seriously than the white victim ($t = -.88$, n.s.).

However, Ss in the Together condition, when asked to indicate their impression of the extent to which the other bystanders thought the receiver was injured (see Table 1) judged that the other bystanders thought the black victim was injured less seriously than the white victim ($t = -2.78$, $p < .02$). Perhaps, if Ss were inclined to accept a "no help needed" interpretation of the situation for black than for white victims, they were more likely to interpret the passivity of others in a manner that is supportive of this inclination.

The high proportion of Ss helping the white victim in the Together condition (i.e., 90%) appears incompatible with the findings of Latane and Rodin (6) in which only 7% of the Ss intervened in the presence of only one passive confederate ("stooge" condition). In the present study, however, the

S was relatively more active in the situation than any of the other bystanders. The S was the first receiver and knew herself to be the only participant aware of the precariously stacked chairs in the receiving room. She could have believed (when she wanted to) that the other bystanders were not a reliable source of information regarding the magnitude of the potential danger (in fact, three Ss in the white victim condition spontaneously pointed this out during the postexperimental interview).

In general, the results tend to support the viability of the hypothesis that attitudes toward the victim can mediate helping behavior by differentially affecting the bystanders' definition of the situation.

However, alternative explanations must be considered. That black victims were helped as frequently as white victims in the Alone condition but less frequently in the Together condition, suggests that whites may be more inclined to diffuse responsibility for black victims than for white victims. It should be noted that diffusion of responsibility can occur only when the bystander has defined the situation as one in which help is needed and also after he is reasonably sure that other bystanders similarly recognize the necessity for help. Also, he must perceive that others are willing and able to intervene.

A second alternative explanation for the Alone-Together: Black-White interaction effect suggests that in the presence of passive bystanders, a person may be influenced by pressures to conform to the norm of nonintervention more easily for black victims than for white victims. This conformity explanation suggests that the bystander recognizes that help is needed, but feels restrained from helping by his concern for being viewed as a deviant. Although the results of the postexperimental inquiry regarding the perceived seriousness of the emergency is equivocal, they seem to speak more favorably of the "no help needed" hypothesis.

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A NONREACTIVE PREDICTOR OF A "LIQUOR BY THE DRINK" REFERENDUM*

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SUMMARY

The lost letter technique (2) was used as a predictor of the outcome of the 1973 "liquor by the drink" referendum in Greensboro, North Carolina. Three hundred letters with a note, "Found by your car—thought it might be yours," were placed under the windshield wipers of automobiles selected at random. One hundred letters were addressed to a committee favoring passage of the referendum, 100 to a committee opposed to its passage, and 100 to a neutral third party. The return rate of the letters accurately predicted the outcome of the election. It was recommended that the lost letter technique be used as a nonreactive predictor of the outcome of an election when two conditions are met: (a) when voters are reluctant to state publicly their position on an issue, and (b) when the issue has aroused strong feelings in the population.

A. INTRODUCTION

Milgram (2) used the lost letter technique in order to eliminate the problem of reactivity in survey research. Posted letters were left face up on the street or placed under windshield wipers of automobiles in a designated area. The letters were addressed either to a committee supporting a specific candidate or issue, to a committee opposing that candidate or issue, or to a neutral third party. The differences in the return rate of the letters were used to predict the outcome of the vote. Letters placed under the windshield wipers of automobiles provided the best results, since they were more likely to be discovered and more likely to come into the possession of a voter.

Milgram reported that the technique was successful in predicting attitudes toward the Nazi and Communist parties, integration in southern cities, and the outcome of the Johnson-Goldwater election in 1964. More recently, a lost letter study conducted by Weiner and Lurey (3) was not successful in predicting the outcome of the 1972 presidential election. It was interesting

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to find, however, that significantly more letters were returned addressed to a neutral third party than those addressed to committees supporting either of the presidential candidates. There were no differences in the return rate of letters addressed to committees supporting either candidate and, furthermore, the return rate of letters addressed to presidential committees was significantly lower than that reported by Milgram prior to the 1964 election.

This finding led to the hypothesis that the low return rate of the letters was due either to an active dislike of both candidates in the 1972 campaign or to voter apathy. Milgram did contend that the lost letter technique would not predict the outcome of elections that did not arouse strong feelings.

In view of this, a second lost letter study was conducted in Greensboro, North Carolina, with regard to the 1973 "liquor by the drink" referendum. There was a sufficient amount of evidence, to be discussed later, which indicated that this issue did arouse strong feelings.

B. METHOD

Three hundred letters were distributed by 30 undergraduates enrolled in the social psychology course at the University of North Carolina at Greensboro. They were distributed between 9:00 p.m. and 10:00 p.m. on the night of October 29th, eight days prior to the election.

Ten letters were distributed on each of 30 streets selected randomly from a Greensboro street index. Each letter was placed under the windshield wiper of an automobile, also randomly selected, with a handwritten note saying, "Found this by your car—thought it might be yours." In all cases, the letters were placed with the handwritten note facing up and the typed address facing the windshield.

One hundred of the letters were addressed to Citizens for Passage of the Liquor by the Drink Referendum, 100 to Citizens Against Passage of the Liquor by the Drink Referendum, and 100 to Mr. Michael Cunningham. The name, Michael Cunningham, was chosen because it did not have any obvious racial or ethnic associations. Furthermore, each of the 200 letters addressed to committees had "Attention: Mr. Michael Cunningham" typed below the address. The three hundred letters were evenly distributed among the 30 streets selected.

All of the letters were addressed to the same post office box. Each was sealed and stamped, and contained an appropriately worded ambiguous letter.

All of the letters returned on or before the morning of November 6th, the day of the election, were included in the tabulation.

C. RESULTS

A Pearson chi square analysis (1) indicated that the return rate of the letters deviated significantly from that which would have been expected by chance (chi square = 18.00, 2 *df*, $p < .001$). Fifty-one percent of the letters addressed to the committee opposing the referendum were returned compared to 36% of the letters addressed to the committee favoring passage (chi square = 8.31, 1 *df*, $p < .01$). Letters addressed to the neutral third party were more likely to be returned (66%) than letters addressed to either the committee opposing the referendum (chi square = 8.41, *df*, $p < .01$) or to the committee in favor (chi square = 29.78, 1 *df*, $p < .001$).

D. DISCUSSION

Although the proponents of liquor by the drink were expecting to win a majority in Greensboro (Greensboro Daily News, November 7, 1973), the present study predicted that the city would defeat the referendum. The same prediction would have been made at any point in time prior to the November 6 cutoff date for the tabulation of the result. Greensboro's voters cast 14,886 (49.44%) votes for liquor by the drink and 15,225 (50.56%) against it (Greensboro Daily News, November 7, 1973). The lost letter technique accurately predicted the outcome. Unfortunately, since public opinion polls were not available prior to the election, it was impossible to compare the accuracy of the lost letter technique to more traditional surveys.

The Greensboro Daily News on November 4, 1973 stated that "... not many people were willing to be identified with the campaign." This was further evidenced by the fact that the proliquor forces were reluctant to comply with the law to make their sources of financial contributions public (Greensboro Daily News, November 4, 1973).

Available evidence also indicated that the voter apathy which may have led to a failure to predict the winner of the 1972 presidential election (3) was not a factor in the present study. On the morning of November 6, 1973, the Greensboro Daily News predicted a "heavy turnout" of 20,000 voters. The actual turnout was 30,111. The heavy voter turnout along with a reported \$360,000 in total campaign contributions (Greensboro Daily News, November 4) indicated that the issue did arouse strong feelings.

The results of the studies which have been reported to the conclusion that two conditions must be met to make the lost letter technique a viable method of predicting the outcome of an election. First, people should be reluctant to make their stand on the issue public. If this condition is not met,

a nonreactive measure would be unnecessary. Second, the issue must elicit strong feelings in the voting population.

The present study did not support Milgram's contention that "the differences in return rates will always be weaker than the extent of actual difference of community opinion" (p. 66). His statement was based on the return rate of letters prior to the Johnson-Goldwater election which was decided by a landslide. The results of the present study overestimated the difference in community opinion. The most that can be said is that the lost letter technique may accurately predict the results of elections under the conditions specified, but it is not an accurate predictor of the extent of the differences expressed at the polls.

In both the present study and in the 1972 presidential election study, the probability of a letter being returned to a neutral third party was significantly higher than that for a letter addressed to a committee with political affiliations. Perhaps this indicates the existence of a negative attitude toward political committees in general among the population of Greensboro.

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MOTIVATION AND ACHIEVEMENT IN BLACK AND WHITE JUNIOR COLLEGE STUDENTS*¹

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SUMMARY

A number of motivational variables (need for achievement, educational aspiration, social science interest, self-concept of ability, test anxiety, and internal-external control) were correlated with grades obtained by males in an introductory social science course. There were no race or social class differences in level of motivation. The motivational variables highly correlate with achievement were as follows: for lower-class students, both black and white, social science interest; for middle-class black students, educational aspiration; and for middle-class white students, test anxiety. Middle-class black students tended to be overachievers; middle-class white students, under-achievers. The findings indicate that generalizations about racial differences may not hold true for particular subgroups, and suggest interest in the subject as important in motivating lower-class students for academic achievement.

A. INTRODUCTION

Studies comparing the academic achievement of black and white students have consistently shown higher academic achievement on the part of whites, yet studies on interest in and desire for education have shown that blacks have aspirations which are equal to those of whites, or higher (3, 15).

A number of motivational explanations for the relatively low academic achievement of black students have been offered. Rosen (13) has suggested that black youth have less need for achievement. Katz (9) has hypothesized

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² Requests for reprints should be sent to the author at the address shown at the end of this article.

that the black child has high standards that he cannot reach, and the result is self-criticism, discouragement, and anxiety and fear of failure in achievement situations. Morse (12) found that black eighth-graders were significantly lower than white eighth-graders in Self-concept of Ability. The motivational variable which has received the most attention is a sense of personal control; Coleman *et al.* (3) and Lao (10) have found relationships between black students' sense of personal control over their lives, and academic achievement.

Previous studies, however, have a number of defects. Many have failed to control for social class, or for the academic aptitude of the students. Given the overall social class differences between the white and black populations, researchers who do not control for social class may be interpreting social class differences as racial differences. A number of researchers have found a relationship between the variable which is of interest to them, and achievement. However, in some cases, the researcher tends to focus on his pet variable and to neglect the role of other factors and their interrelationship in the total personality of the subject.

The present study attempted to overcome these defects, and to assess the relative importance of different motivational determinants of achievement in black and white students.

B. METHOD

1. Subjects

The subjects were male lower-class and lower-middle-class students in a Northern urban junior college.³ They were enrolled in an interdisciplinary social science course which was required for the Associate of Arts degree. Students over age 25, and students with poor academic records at a previously attended four-year college were eliminated from the sample. Students who would be considered upper-middle-class or above were eliminated, to eliminate students who would normally be expected to attend a four-year college and

³ SES was derived from father's education and occupation (mother's education and occupational prestige were rated on a five-point scale. (The scale for occupational prestige was derived from the Duncan (4) scale. Students whose parent's occupational prestige was 68 or higher on the Duncan scale were eliminated from the sample.) The two scores were added, and the result dichotomized to define lower- and middle-class subjects.

The lower-class subjects consisted mainly of the sons of unskilled or semi-skilled workers, often factory workers, usually with less than a high school education. The middle-class sample, in reality a predominantly lower-middle-class sample, consisted mainly of the sons of skilled workers, clerical workers, and small businessmen with a high school education or better.

might have serious personality and/or motivational problems. The sample consisted of 93 white students and 66 black students.

2. Data Collection

a. Information obtained from the subjects. During a regular class period the subjects filled out questionnaires containing measures of various motivational variables. School interest was measured by items from Coleman *et al.* (3) and Farquhar (5). The amount of education which the subject planned to obtain provided a measure of educational aspiration. Need for achievement was measured by the French (6) Test of Insight; this test was used rather than the McClelland (11) test because the stimulus persons are not identified by race. Self-concept of Ability in academic situations was measured by a scale developed by Brookover, Paterson, and Thomas (2); test anxiety was measured by the Alpert-Haber (1) test of debilitating anxiety. Sense of personal control was measured by the Rotter (14) Internal-External Control (I-E) Scale and two subscales, Personal Control and Control Ideology, derived from a factor analysis of the I-E Scale (8). A number of items which measured interest in the course formed a social science interest scale.⁴ In addition, information on race and parent's occupation and education was obtained.

Both black and white testers were used; in approximately half the classes, the data were collected by a black tester, in half by a white tester.

b. Information obtained from the college registrar. American College Testing Program (ACT) scores provided a measure of academic aptitude. The test provides subscores in English, Mathematics, Social Studies, and Natural Science.

Grades from all students who completed the course were obtained from the registrar; the grades for each teacher were translated into T-scores to correct for instructor harshness or leniency in grading.

C. RESULTS

Race \times SES \times race of tester analyses of variance were performed on all the major variables. White students obtained significantly higher grades ($F = 4.72$, $p < .05$) and significantly higher scores on all four ACT subtests. (For English, $F = 27.28$, $p < .001$; for Math; $F = 20.65$, $p < .001$; for Social Studies, $F = 24.07$, $p < .001$; for Natural Science, $F = 19.36$, $p < .001$.)

⁴ This scale consisted of three items about the student's interest in the course, its relationship to his interests and goals, and whether he would take it if it were not required.

An analysis of covariance with grades as the dependent variable and ACT scores as covariates yielded a race \times SES interaction which approach significance ($p < .10$). Relative to their aptitude, middle-class blacks tended somewhat to overachieve and middle-class whites tended to underachieve.

Black and white students did not differ significantly on any of the motivational variables. (The F ratios were as follows: School interest, 1.75; educational aspiration, 1.23; test anxiety, 1.99. All other F ratios were less than one.)

For each race-SES subsample, the various motivational and ACT scores were correlated with social science grades. The results, where the correlations were significant for any subsample, are listed in Table 1.

To determine which of these variables had an effect on achievement, when aptitude was controlled, multiple stepwise regressions were performed for each subsample. When several variables were highly intercorrelated, only one of them was included in the stepwise regression in order to avoid problems of multicollinearity (7).

The results of this analysis are shown in Table 2.

For lower-class blacks and lower-class whites, social science interest was the only variable which entered the multiple regression, other than an ACT score. For middle-class blacks, educational aspiration was the most important variable other than ACT score. It was highly correlated with school ambition, a scale derived from a factor analysis of the Coleman *et al.* (3) and Farquhar (5) items relating to interest in school. For middle-class whites, test anxiety

TABLE 1
CORRELATIONS OF MOTIVATIONAL VARIABLES WITH SOCIAL SCIENCE GRADES
(T-SCORES), BY RACE-SES SUBSAMPLE

Variable	Blacks		Whites	
	Lower class (range of n's: 26-33)	Middle class (range of n's: 17-22)	Lower class (range of n's: 42-47)	Middle class (range of n's: 34-39)
Social science interest	.57*	.15	.38*	.10
School ambition	.16	.49*	.39**	.10
Educational aspiration	.29	.70**	.02	.20
Self-concept of Ability	.42*	.32	.19	.32*
Test anxiety	-.39*	.17	.20	-.55**
ACT scores				
English	.47*	.51*	.23	-.01
Social Studies	.49*	.69**	.28	.14
Natural Science	.51**	.50*	.32*	.10

* $p < .05$ (two-tailed test).

** $p < .01$ (two-tailed test).

TABLE 2
STEPWISE MULTIPLE REGRESSION RESULTS, WITH SOCIAL SCIENCE GRADE
AS THE DEPENDENT VARIABLE

Variable(s) entering	r^a	Multiple R
ACT—English		
Lower-class blacks ($n = 22$)		
ACT—English plus social science interest	.62**	.80***
ACT—Social studies		
Middle-class blacks ($n = 17$)		
ACT—Social studies plus educational aspiration	.69**	.79**
Social science interest		
Lower-class whites ($n = 40$)		
Social science interest plus ACT—Math	.39*	.50**
Test anxiety		
Middle-class whites ($n = 32$)	-.47**	

^a Correlations are slightly different from those in Table 1 because subjects with missing scores were not included in the multiple regression.

* $p < .05$ (two-tailed test).

** $p < .01$ (two-tailed test).

*** $p < .001$ (two-tailed test).

was the most important variable, more important than any of the ACT scores. It was highly negatively correlated with Self-concept of Ability.

D. DISCUSSION

The present study provides no support for previous studies which found racial differences in motivation or in the motivational correlates of achievement. There were no significant racial differences in scores on the motivational variables.

With respect to motivational correlates of achievement, social class differences and race-social class interactions were central.

Among middle-class students, for blacks the most important correlate of achievement was educational aspiration. When ACT scores were controlled, middle-class blacks tended to overachieve in comparison with middle-class whites. Thus, the middle-class blacks showed a sort of "Horatio Alger" pattern, striving for long-term goals and doing well relative to their ability.

The achievement of middle-class white students was most highly correlated with test anxiety and Self-concept of Ability. They did not have more anxiety or poorer self-concepts than other students, but perhaps they were less able to copy with anxiety. The middle-class white students were the only race-social class subsample in which none of the ACT scores was significantly correlated with social science grades. They tended to underachieve relative to their ACT scores, in comparison with the middle-class black students.

Thus, among the middle-class students, white and black students showed patterns that were the reverse of those that would be predicted by the social scientist. This pattern is probably a function of who goes to an urban junior college. Even among lower-middle-class students, white students are probably more likely to go to a four-year college than blacks. Therefore, the white lower-middle-class students attending a junior college may have more motivational problems than black students at the same social class level.

These data indicate the pitfalls of generalizations about racial differences in motivational patterns; differences found in one sample may not exist in other samples which are differently selected.

For lower-class students, both black and white, social science interest was positively correlated with achievement, and contributed more to the multiple R than any other motivational variable.

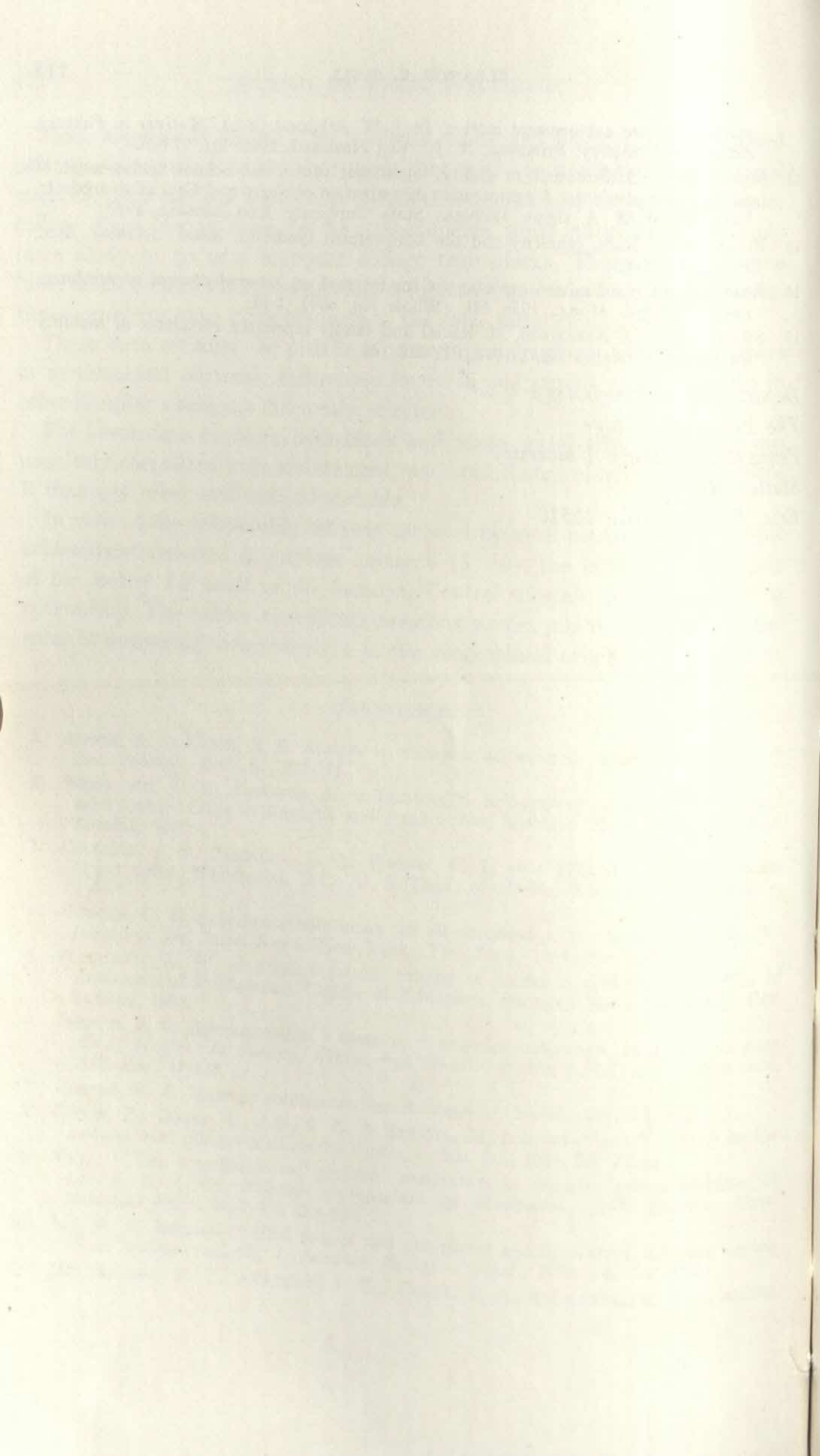
In view of the relationship between sense of personal control and academic achievement reported in previous research (3, 10), the lack of relationship of the Rotter I-E scale or the Personal Control subscale to achievement is noteworthy. The failure to replicate previous studies might be due to differences in measuring instruments, or in the geographical origin of the subjects.

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GROUP CONFORMITY INFLUENCE: A PROPOSED MEASURE*

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SUMMARY

Substantial measurement problems are encountered in evaluating group conformity influence. These measurement problems center around the need for a measure which takes into account (a) the relevant range of behavior or attitude alternatives in a given situation, (b) variation in group size, and (c) the probability of occurrence of any particular behavior or attitude pattern in a group, given the empirical distribution of behavior or attitude choices in the total subject-sample involved.

This study compares two measures of group conformity influence which take these measurement problems into account; a multinomial based measure and a hypergeometric based measure. The findings of the study suggest that the hypergeometric measure appears to be more conceptually valid, while the multinomial measure may possess more strength statistically. However, these findings are far from conclusive and the present investigation serves to underscore the need for further research in this area if methodologically and conceptually sound progress is to be made in expanding our knowledge of the impact of the group on human behavior.

A. INTRODUCTION

The significance of the individual-group relationship in shaping the behavior, attitudes, and values of group members has been documented in numerous studies reported in the literature of social psychology. It has been well established that the verbal and visual interpersonal interaction which occurs in a group context may result in varying degrees of group pressure toward behavioral and (or) attitudinal congruence among group members.

However, substantial measurement problems are encountered in investigating variation in group conformity influence. These measurement problems center around the need for a measure of conformity influence which takes into account:

1. The relevant range of behavior or attitude alternatives in a given situation,

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2. Variation in group size, and
3. The probability of occurrence of any particular behavior or attitude pattern in a group, given the empirical distribution of behavior or attitude choices in the total subject-sample involved (9).

Witt and Sen have proposed a probabilistic measure of group conformity influence based on the multinomial probability distribution which takes these measurement problems into account (9). The purpose of this paper is to present an alternative measure with potentially valuable statistical and conceptual differences.

The measure presented here is based on the hypergeometric probability density function and is appropriate for use in sampling situations in which trials result in a reduction of sample space with concomitant changes in trial probabilities (2). A hypergeometric probability can be computed by substituting in the following formula (2):

$$P(C/N, n, r) = \frac{\binom{N-r}{n-c} \binom{r}{c}}{\binom{N}{n}},$$

where N is the total number of individuals in the sample, n is the number of individuals in a given group, r is the number of individuals in the sample selecting a particular behavior alternative and c is the number of individuals in a group selecting a particular behavior alternative. In interpreting a hypergeometric probability as a measure of group conformity influence, the lower the probability of a group behavior pattern, the higher the degree of inferred group influence on member behavior.

Operationally, a hypergeometric probability is calculated only for groups exhibiting some degree of congruent behavior. In a group where all members select different behavior alternatives a probability of 1.0 is assigned. In the event that two or more behavior patterns are adopted by subsets of the primary group, a hypergeometric probability is calculated for each of the subset behavior patterns. The lowest of the resulting probability figures is used as the indicator of inferred conformity influence in the primary group.¹

The following two examples will serve to clarify the nature and procedure of the proposed hypergeometric based measure of group conformity influence. In the first example assume the following general conditions: 25 four

¹ A set of hypergeometric tables has been developed by G. J. Liberman and D. B. Owen (5).

member groups; four possible behavior alternatives (A, B, C, D) with 30% of the total subject sample selecting behavior alternative (A), 10% selecting alternative (B), 30% selecting alternative (C), and 30% selecting alternative (D). Assume that in group number one the following behavior pattern is observed: three group members select behavior alternative (A) and one group member selects alternative (D). Thus, computation of the proposed hypergeometric measure would involve the following inputs: $N = 100$ (25×4), $n = 4$, $r = 30$ (i.e., $30\% \times 100$) and $c = 3$. Substituting these values in the previously presented formula yields a cumulative hypergeometric probability of .08. This probability figure could then be used as a relative measure of inferred group conformity influence. In this example the low probability figure (i.e., .08) would probably be interpreted as indicative of a relatively high level of operative group conformity influence.

In the second example assume the following general conditions: 15 six-member groups; three possible behavior alternatives (A, B, C) with 40% of the total subject-sample selecting behavior alternative (A), 40% selecting alternative (B), and 20% selecting alternative (C). Assume that in group number one the following behavior pattern is observed: four members select behavior alternative (C) and two members select alternative (A). Computation of the hypergeometric measure would thus involve the following inputs: $N = 90$ (i.e., 15×6), $n = 6$, $r = 18$ (i.e., $20\% \times 90$) for behavior alternative (C), $r = 36$ (i.e., $40\% \times 90$) for behavior alternative (A), $c = 4$ for behavior alternative (C) and $c = 2$ for behavior alternative (A).

Substituting in the previously presented formula yields a cumulative hypergeometric probability of .014 for four or more group members selecting behavior alternative (C) and a hypergeometric probability of .78 for the two or more group members selecting behavior alternative (A). As previously stated, in groups where two or more behavior patterns are adopted by subsets of the primary group the lowest of the resulting probability figures is used as an indicator of inferred conformity influence in the primary group. Thus in the present example the probability figure associated with the four group members selecting behavior alternative (C) is used as the indicator of inferred conformity influence. The magnitude of the probability figure would suggest a relatively high level of operative group influence.

The hypergeometric based measure of group conformity influence, in addition to meeting the measurement objectives previously presented, offers two possible advantages over a multinomial based measure. First, it treats the subject sample as a small finite universe affected by trials. Second, and perhaps more important, is the fact that the hypergeometric based measure focuses

only on manifestations of congruent behavior, while the multinomial based measure is affected by the behavior of all group members whether or not their behavior manifests congruence. Conceptual and statistical arguments can be made for both the hypergeometric and multinomial based measures. Thus, as is frequently the case, the researcher must examine the face validity of empirical results obtained with alternative measurement models to find guidance for his selection.

B. METHODOLOGY

To provide an empirical basis for selecting between the multinomial and the hypergeometric measurement models both methods were used in analyzing the data of a recently published study by Witt and Bruce (8). This study investigated group conformity influence on member brand choice. The data were drawn from a sample of 25 groups of housewives. Each group consisted of three members, all of whom were at least acquainted with each other. Group members were selected subject to the additional constraint of being likely to shop together or to discuss supermarket type purchases with other group members.

Regression analysis was used to evaluate the ability of a set of predictor variables to explain variation in the amount of conformity influence operative in the groups. Brand choice congruence among group members was used as a measure of operative group conformity influence (i.e., as the study's criterion variable) in a given brand choice context. The previously discussed multinomial based measure of congruence was used to evaluate conformity influence. This measure was transformed with the use of the arcsin \sqrt{p} transform prior to analysis.² Seven product types were involved in the study: frozen vegetables in plastic cooking bags, instant coffee, ground coffee, spray foam rug cleaner, laundry detergent, and dust-and-wax furniture spray.

Five determinants of group conformity influence (i.e., predictor variables) were involved in the study: affectivity, need for social approval, group member knowledge of the purchase behavior of fellow group members, perceived purchase decision expertise, and perceived product conspicuousness.

Affectivity was measured by means of a Likert type scale question to which the respondent indicated how well she liked each of the members of her group on a five-point scale ranging "like extremely well" to "don't like very well." Responses for all members of a group were averaged to produce a mean group affectivity score.

Need for social approval was measured by means of the Marlowe-Crowne

² The arcsin \sqrt{p} data transform was required in order to meet the homoscedasticity constraint of the statistic used in analyzing the data of the study.

Social Desirability scale, which consists of 33 true-false statements. In tests by Marlowe and Crowne the scale's internal consistency and test-retest coefficients were both found to be approximately .9 (3).

Group member knowledge of the purchase behavior of fellow group members was measured in each purchase context by the following procedure: (a) each group member was asked to indicate what brand of each of the test products her fellow group members used, (b) each indication of perceived brand use was checked against the actual brand choice of the group member involved, (c) the number of correct brand-use identifications was divided by the total possible number of brand use identifications for a given group to produce a percentage measure of group member knowledge, (d) the decimal equivalents of the resulting percentages were used as predictor variables after a transformation involving the arcsin \sqrt{p} transform (2).

Perceived purchase decision expertise was measured by means of a five-point Likert type scale question which required an evaluation of each fellow group member's ability to judge the "quality" and "value" of different brands in each of the seven test product categories. Perceived product conspicuousness was measured in each purchase context by means of a five-point Likert type scale which required the respondent to indicate the likelihood that fellow group members were aware of her brand choice.

The data were analyzed by a iterative multiple regression routine which assessed the ability of the five determinants (i.e., predictors) of group conformity influence to explain variance in group conformity influence. The results of this analysis are presented in the "multinomial measurement" column of Table 1.

In order to provide a basis for evaluating the hypergeometric based measure of group conformity influence the data of the previously described study were reanalyzed by the hypergeometric measure and the same iterative multiple regression routine. In order to provide comparability with the multinomial based measure, the hypergeometric measure of conformity influence was also transformed with the arcsin \sqrt{p} transform. The results of the reanalysis are presented in the "hypergeometric measurement" column of Table 1.

C. DISCUSSION

The data in Table 1 provide a basis for evaluating the multinomial and hypergeometric based measures. In the examination of the results produced with the multinomial based measure it can be seen that the "dominant" predictor variables ranged over all five of the predictor variables with no discernible conclusive explanatory pattern and not in accord with intuitive

TABLE 1
COMPARISON OF THE MULTINOMIAL AND HYPERGEOMETRIC
APPROACHES TO MEASUREMENT OF BRAND CHOICE CONGRUENCE

Product	Multinomial Measurement of Brand Choice Congruence			Hypergeometric Measurement of Brand Choice Congruence		
	Adjusted R^2	Dominant predictor variables ^a	% of unadjusted R^2 explained	Adjusted R^2	Dominant predictor variables ^a	% of unadjusted R^2 explained
Cook-in-bag frozen vegetables	.41	Perceived conspicuousness	99	.00	Perceived conspicuousness	40
Instant Coffee	.21	Perceived expertise	82	.00	Perceived conspicuousness	50
Ground Coffee	.20	Group knowledge	80	.20	Perceived conspicuousness	67
Spray foam rug cleaner	.16	Need for social approval	45	.04	Perceived conspicuousness	98
Laundry presoaker	.14	Group knowledge	22	.02	Need for social approval	83
Laundry detergent	.06	Perceived conspicuousness	73	.02	Group knowledge	49
Dust-and-wax furniture spray	.04	Perceived expertise	34	.02	Affectivity	49
		Group knowledge	33			
		Affectivity	55	.00	Perceived conspicuousness	54
		Perceived expertise	30			

^aPredictor variable(s) explaining the largest portion of unadjusted R^2 .

expectation. However, the "dominant" predictor variables produced with the hypergeometric measure were relatively highly concentrated with perceived product conspicuousness, being the dominant predictor variable in five of the seven cases. That the perceived "conspicuousness" of a behavioral act should be the dominant predictor (i.e., explanatory variable) of group conformity influence is both intuitively reasonable and in accord with previous research findings (1, 4, 6, 7, 8, 9).

It is reasonable to speculate that the relative importance of perceived conspicuousness as a determinant of group conformity influence is due to two major reasons. First, the symbolic value of a behavioral act (in this case a purchase decision) is predicated on its communicative power. Communicative power, in turn, is a function, in large part, of the self perceived "visibility" of the behavioral act in question. The second reason is closely related to the first. To the extent that a behavioral act is designed to elicit a desired response or reaction (i.e., reward) from the individual's social environment (e.g., a small informal social group) conspicuousness or visibility becomes an enabling mechanism for the reward process(4).

It should be noted that the adjusted R^2 values produced with the multi-

nominal measure are higher, in six of the seven contexts investigated, than the adjusted R^2 values produced with the hypergeometric measure (see Table 1). It would appear that the multinomial measure may be more "sensitive" than the hypergeometric measure. However, the greater conceptual validity of the hypergeometric measure would seem to counterbalance this greater sensitivity. In any event the fact that both models have merit serves to underscore the need for additional methodologically oriented research in the group conformity influence area.

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EFFECTS OF GROUP SIZE AND STIMULUS AMBIGUITY ON CONFORMITY*¹

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SUMMARY

Previous studies suggest that group size effects on conformity are obtained in unambiguous but not in ambiguous stimulus situations. The purpose of the present experiment was to examine this suggested interaction between stimulus ambiguity and group size. These two independent variables were varied in a 2×4 factorial design. Under the guise of a learning experiment 140 females were exposed to social pressure by use of a Crutchfield apparatus. ANOVA on the conformity scores indicated a strong linear group size effect ($p < .001$), but no significant interaction. It was concluded that the group size effect can be obtained in ambiguous stimulus situations, and suggested that methodological differences might account for previous failures to find this effect. The well-known effect of stimulus ambiguity on conformity was replicated in the experiment.

A. INTRODUCTION

The last 20 years have seen a proliferation of studies emphasizing the effects of personality factors, as well as situational factors, on conformity behavior among the predominately American college students who have served as subjects. Allen's (1) review of situational factors implied that although some relationships were fairly well established, still oversimplification, imprecise measurements, and unsystematic investigation of the interactions between various situational factors prevailed. The purpose of this study is to focus on one particular interaction, that between group size and stimulus ambiguity.

Most textbooks of social psychology state that an increase in group size beyond three or four members does not affect conformity. This conclusion

* Received in the Editorial Office, Provincetown, Massachusetts, on May 9, 1974. Copyright, 1975, by The Journal Press.

¹ The data were collected while the author was at the University of Maryland. Great appreciation is expressed to Lee Becker who directed the study, to Roland Radloff who provided the conformity apparatus, and to the Computer Science Center, University of Maryland, which granted time for the data analyses.

is based on Asch's (2) research with nonambiguous stimuli. Since then, Rosenberg (11) has reported a significant drop in conformity at group size five, and Gerard, Wilhelmy, and Conolley (6) have found increases in conformity up to group size eight. Both of these later studies used Asch's line judgment task.

Other studies (7, 10) have failed to find an effect of group size on conformity. There are at least two basic differences between the studies cited above which found a relationship and those later studies which found no relationship. One difference, as noted by Goldberg (7) and by Allen (1) is that the feedback in the later studies was presented as a summary of the group's position. A group summary may not necessarily imply consensus. It may be that the impact of the group was reduced by this group feedback manipulation compared to the typical Crutchfield (4) procedure where each group member sees the individual answers from the other members (these answers are provided by the experimenter unknown to the subjects). Another difference is that the stimuli used, estimations of flickering lights by Kidd (10) and estimations of intelligence quotients of strangers by Goldberg (7), were relatively ambiguous when compared with the line judgment task. It is possible that maximum conformity occurred with only one other person present, and that further increases in group size had no effect.

In view of these facts the present study attempts to clarify the relationship between group size and conformity by employing the same Crutchfield type response procedure with two stimulus ambiguity conditions. If the discrepancies in results reported above are due only to the methodological differences in feedback, the revised procedure should yield group size effects on conformity in both stimulus conditions. Conformity should increase with increases in group size (at least up to three or four members) regardless of ambiguity condition. However, if with this revised procedure no group size effect is produced in the highly ambiguous situation, or the group size trend is different in the two ambiguity conditions, it would be concluded that stimulus ambiguity moderates the relationship between group size and conformity. The research questions can thus be briefly summarized as (a) Is there a group size effect on conformity in ambiguous stimulus situations? (b) Does stimulus ambiguity interact with group size as to modify the relationship between group size and conformity?

B. METHOD

1. Overview

In a 2×4 factorial design the independent variables of stimulus ambiguity and group size were varied. The guise of the experiment was a study of

learning. In the training phase the Ss were taught to infer a criterion variable from a set of three cues. Stimulus ambiguity was manipulated through the validity of the cues for predicting the criterion. After the training session, the Ss were exposed to social pressure by a Crutchfield apparatus, and their conformity responses were observed.

2. *Subjects*

The subjects were 140 female undergraduates enrolled in Introductory Psychology at the University of Maryland. The students volunteered to participate to earn extra credit toward their course grade, and were recruited from sign-up sheets.

3. *Apparatus*

A Crutchfield (4) type conformity apparatus was used. The five individual subject units were placed on three sides of a square table and partitioned from one another by curtains. The master control panel was placed in an adjacent room.

4. *Procedure*

a. Training phase. The Ss were run in groups of either two, three, four, or five, which corresponded to the unanimous group majorities of one, two, three, and four, respectively. The ambiguity condition was randomly assigned with the toss of a coin prior to each session. Upon entrance the Ss took seats of their choice in the experimental booths. A piece of cardboard covered the panel of each apparatus except for the top row of lamps which was labeled "correct answer." Response sheets had been placed in the booths beforehand. The instructions given to the Ss described the experiment as a study of learning.

There were 80 training trials. A trial consisted of (a) a stimulus presentation; (b) a judgment by the S; and (c) feedback. The stimuli were projected on the wall of the laboratory in full view of all Ss. Each slide contained three modified personality traits: intelligence, empathy, and creativity. Each trait was modified by a number from 0 to 9, representing a point on a 10-point intensity continuum (0 = not at all, 9 = extremely). The Ss were asked to estimate the degree of hypnotic susceptibility of a person who possessed the given set of traits. They responded by marking a 10-point scale (0 = not at all hypnotizable, 9 = extremely hypnotizable). During training, an S's response was not available to any of the other Ss. Correct answer feedback was presented by the E to all Ss, using the top row of 10 lights on the Crutchfield apparatus.

b. Stimulus ambiguity manipulation. An ambiguous stimulus is commonly defined as a stimulus which does not have a unique objectively defined correct response associated with it. Instead, it will appear to have several possible responses, each being correct with a certain probability. These probabilities will generally be dependent on the previous experiences of the individual. In the present experiment these probabilities were supplied and controlled by the experimental training procedure through an adaptation of a multiple-cue model by Hammond, Wilkins, and Todd (8). This procedure made it possible for the *E* to choose purposely and manipulate levels of ambiguity, a refinement over previously reported procedures [see, e.g., Wiener (14); Walker and Heyns (13)].

For the present experiment stimulus ambiguity was operationally defined as the degree of predictability of the feedback, based on the intensity values of the three cues. The degree of predictability was chosen to be primarily determined by the correlation between the cue "empathy" and the feedback. In the low ambiguity condition empathy correlated .95 with the feedback, and in the high ambiguity condition the correlation was .30. These values were expected, on the basis of pilot data, to produce psychologically different experiences of feedback predictability. The other two cues, intelligence and creativity, had zero correlation with the feedback values; near zero correlation with the critical cue, empathy; and a moderate correlation with each other. The trait and feedback values were generated by a computer program. The stimulus set was identical for both ambiguity conditions. The manipulation was effected by different feedback values over the 80 trials. During a single session only one ambiguity condition was presented.

c. Testing phase. After the 80 training trials the *Ss* were instructed that they would next be tested on how well they had learned to make the predictions about hypnotic susceptibility. The cardboard covering the panels was removed, and the functioning of the apparatus explained. Following standard conformity experiments, each *S* was instructed that she would be the last to respond and led to believe that the response of the others would be shown on the panel before her. Unknown to the *Ss*, the *E* manipulated the group responses to produce group pressure.

A total of 27 test trials were given, comprised of the first 27 slides used in the training phase. Nine unanimous pressure trials were intermixed with 18 nonunanimous neutral trials. The order of these trials was randomly determined and constant across conditions. The dependent variable was the number of pressure trials on which the *S*'s response exactly matched the fictitious group response.

Upon completion of the testing phase, the Ss filled out a questionnaire which included ambiguity manipulation checks and, in addition, attempted to assess the degree of awareness of the true purpose. The Ss were then thanked for their participation and asked not to talk about the experiment. A full explanation and results were mailed to them approximately one month later.

C. RESULTS

The effectiveness of the stimulus ambiguity manipulation was checked by four nine-point rating scales indicating enjoyment of the experiment, certainty of predicting correctly, ambiguity of the task, and difficulty of the task. In addition, the Ss estimated the number of trials out of 10 they had predicted correctly. The 2×4 fixed effects analyses of variance on the manipulation checks are summarized in Table 1. As can be seen from the table, ambiguity main effects were obtained for all five manipulation checks. The means reported in Table 2 indicate that Ss in the low ambiguity condition enjoyed the task more, were more certain of their prediction, felt the task less ambiguous, and gave a higher estimate of their perceived correctness than the Ss in the high ambiguity condition. The results also show a significant group size effect for enjoyment; the mean enjoyment in group sizes two and five was lower than the mean enjoyment in group sizes three and four.

A 2×4 fixed effects analysis of variance was performed on the conformity scores. Seventeen percent of the Ss indicated some suspiciousness about the

TABLE 1
SUMMARY OF ANALYSES OF VARIANCE OF CONFORMITY SCORES AND MANIPULATION CHECKS (*F* ratios)

Source	df	Dependent variable—Conformity	Manipulation checks				
			Enjoyment	Certainty	Ambiguity	Difficulty	Estimation
Ambiguity (A)	1	9.87**	6.30**	45.30***	9.37**	35.11***	44.24***
Group size (G)	3	8.21***	2.77*	1.96	1.61	<1	<1
Linear	1	21.25***					
Quadratic	1	1.34					
Cubic	1	1.99					
A \times G	3	<1	<1	<1	<1	<1	<1
Error	132						

* $p < .05$.

** $p < .01$.

*** $p < .001$.

TABLE 2
MEANS OF THE MANIPULATION CHECK MEASURES FOR HIGH AND LOW AMBIGUITY
CONDITIONS ($n = 70$ IN EACH CONDITION.)

Manipulation check	Stimulus ambiguity	
	High	Low
Enjoyment	5.44	6.21
Certainty	3.07	4.89
Ambiguity	5.99	4.90
Difficulty	7.43	5.83
Estimation of no. correct	2.74	4.36

Note: Nine-point rating scale anchored at 9 (extremely) and 1 (not at all).

procedure. Analyses were performed with and without these persons. No differences were found, and the data reported here include all Ss. Tables 1 and 3 show that the high ambiguity condition produced more conformity than the low ambiguity condition ($p < .01$), and that increasing the group size increased conformity ($p < .001$). No interaction effect of stimulus ambiguity and group size was found. In a further analysis the group size factor was partitioned into its linear, quadratic, and cubic components. The trend analysis showed that only the linear trend was significant ($p < .001$). The two main effects accounted for 18% of the variance in the conformity scores [Hays' (9) omega square statistic].

D. DISCUSSION

The data from the present experiment indicate that group size effects on conformity were produced in ambiguous stimulus situations. This effect has not previously been obtained with ambiguous stimuli, and it seems likely that previous failures to obtain this effect must be due to methodological shortcomings. In the present study a more powerful manipulation of group

TABLE 3
CELL MEANS, STANDARD DEVIATIONS, AND MAIN EFFECT MEANS OF THE
CONFORMITY SCORES

Group size	Stimulus ambiguity						Mean (group size main effect)
	High			Low			
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	
2	16	.75	1.00	16	.50	.63	.63
3	18	1.50	1.72	18	.78	.81	1.14
4	16	1.75	1.84	16	.56	.96	1.16
5	20	2.75	1.74	20	1.80	2.09	2.28
Mean (stimulus ambiguity main effect)		1.74			.96		

pressure was employed than in the previous studies by Kidd (10) and Goldberg (7).

The hypothesis that the relationship between group size and conformity might be modified by stimulus ambiguity had no support, since no interaction effect was obtained. It seems that at least for the levels of ambiguity used in the present study, group size effects were not influenced by variations in the stimulus situation.

The linear trend found in this study is consistent with the finding of Gerard *et al.* (6), but inconsistent with the findings of Asch (2) and Rosenberg (11). However, since the low ambiguity condition of the present study is not directly comparable with the unambiguous line judgment task employed by the above researchers, those inconsistent previous results cannot be resolved. It can be argued that the findings of a linear trend for the low ambiguity condition strengthens the possibility that the decrease in conformity in Asch's and Rosenberg's studies at group size four or five may have been due to incredulity or suspiciousness. This finding also indicates that the textbook generalization that conformity drops off at group size four or five must be qualified. Conformity need not be curvilinear within that group size range if the stimuli are at least a little bit ambiguous.

The results also show the classic effect of stimulus ambiguity on conformity. This finding is consistent with the bulk of research [see, e.g., Walker and Heyns (13); Sistrunk and McDavid (12); Caylor (3); and Wiener (14)]. It is also consistent with the theoretical prediction from Festinger's (5) Social Comparison Theory. An advantage of the present experimental procedure is the control and quantification of the ambiguity levels afforded by the multiple-cue model.

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CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, 97, 131-132

A CROSS-CULTURAL COMPARISON BETWEEN THE ISRAELI AND AMERICAN FEAR SURVEY INVENTORY*¹

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The Wolpe and Lang Fear Survey Schedule² has been widely used in the U.S. but not elsewhere. Given adjustments in the scale for differences in language, culture, and environmental cues, one may predict higher overall fear scores for Israeli than for American students. (The security situation generates tension and uncertainty and constitutes an immediate and personal source of danger for young men and women subject to periodic army call-ups.) It was also predicted that female students will exhibit a higher general fear level than males.

An Israeli Fear Survey Inventory of 97 items was developed, based mainly on Wolpe and Lang's schedule. Seven new items, specific to the Israeli situation, were added (army service, radio news, etc.). Items irrelevant to Israeli life were deleted. The Ss (129 men and 215 women, university students, average age 21, age range 18-30) rated each item on a five-point scale, from 1 (not at all) to 5 (very much). Test-retest reliability coefficient = .80.

The mean fear intensity score across the 97 items was 2.02 for men and 2.36 for women, indicating that women were more fearful than men ($t = 7.32$, $df = 342$, $p < .001$).³ When the items were grouped according to Wolpe and

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¹ The study was carried out during 1971-1972 and was supported by the Research Committee of Bar-Ilan University.

² Wolpe, J., & Lang, P. J. A fear survey schedule for use in behavior therapy. *Behav. Res. & Ther.*, 1964, 2, 27-30.

³ Tabulated results for all items can be obtained upon request to the authors at the address shown at the end of this article.

Lang's categories, the women evidenced greater fear in every category. When the items with a mean score of 3.00 or more were grouped by sex, it was found that the female items (17 items) included all those of the males (7 items). Items arousing an extreme fear reaction (rated 5) in at least 10% of the male and female samples were classified by Wolpe and Lang's categories. For women, extreme fears were exhibited mainly in the categories "animal," "social," and "tissue," while among men the "tissue" category alone was predominant (i.e., fears associated with tissue damage).

For purposes of comparison with the Israeli data, Manosevitz and Lanyon's study⁴ was chosen on the basis of similarities in method and statistical treatment. Only 57 items appearing in both inventories were considered. Mean fear scores computed across all items indicated greater overall fear in both the Israeli male and female samples. Israeli males: $M = 2.07$; American males: $M = 1.81$; $t = 2.6$, $df = 112$, $p < .01$. Israeli females: $M = 2.48$; American females: $M = 2.13$; $t = 2.69$, $df = 112$, $p < .005$. The only category where the difference in fear level was significant for both sexes—males: $t = 2.47$, $df = 34$, $p < .01$; females: $t = 2.22$, $df = 34$, $p < .05$ —was "tissue," which suggests that this category contributed dominantly to the overall intercultural difference. The reason for this could be the fact that most of the Israeli Ss served in the army and had varied death-associated experience. Finally, it should be noted that none of the specific fear items supposedly characteristic of Israeli society produced higher mean scores than 3.00. The interpretation may be that for social desirability reasons Ss were unwilling to admit war-related fears as such, yet they showed high fear of death, injury, and other stimuli associated with the very same situations where fear was denied.

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⁴ Manosevitz, M., & Lanyon, R. I. Fear Survey Schedule: A normative study. *Psychol. Rep.* 1965, 17, 699-703.

RETINAL PIGMENTATION AND SPACE PERCEPTION: A FAILURE TO REPLICATE*¹

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The findings of an earlier study² indicated that Malawi African subjects (predominantly Chewa and Tumbuka) performed less well on a spatial task involving blue as compared with red hue contrast. Since the exposure time in the original experiment was of the order of half a second, it was decided to conduct a follow-up study where the stimulus duration corresponded more closely to real-life situations and to relate responses to performance on a black-and-white spatial-perceptual test. On the assumption that more intense retinal pigmentation results in lesser spatial-perceptual ability, two predictions were made: (a) Compared with Scottish subjects, Ghanaians would have relatively more difficulty with blue stimuli. (b) There should be a negative correlation between red-over-blue difference scores and performance on a spatial-perceptual test, so that those doing worse with blue stimuli should perform less well on the test.

The new stimulus material consisted of perspective representations of pairs of rectangular solids, which showed three surfaces in different hues of either red or blue. Each solid appeared in both colors in separate trials with order, position, and distribution of surface hues being balanced. After an initial training session, pairs of solids were exposed on slides for 10 seconds, immediately followed by slides containing black line drawings of sets of four figures; two of these corresponded to the real shape of the top surfaces of the pairs of perspective solids, and subjects had 15 seconds to select the correct ones. In addition to this task, subjects were also administered the Paper Folding Test (PFT) from the E.T.S. Kit of Reference Tests for Cognitive Factors.³

The maximum score on the "colored solids" task is 16, with a chance expectation of 2.7. Results are given in brackets immediately following de-

* Received in the Editorial Office, Provincetown, Massachusetts, on June 14, 1974. Copyright, 1975, by The Journal Press.

¹ This study was part of a project supported by the U.K. Social Science Research Council.

² Jahoda, G. Retinal pigmentation, illusion susceptibility, and space perception. *Internat. J. Psychol.*, 1971, 6, 199-208.

³ Buros, O. K. Ed. *The Sixth Mental Measurements Yearbook*. Highland Park, N. J.: Gryphon Press, 1965.

tails of the sample. All subjects were secondary school pupils aged about 14-16; in Scotland there were 54 boys (10.56) and 51 girls (7.33), in Ghana 66 boys (6.88) and 28 girls (5.29) mainly of Ga and Akan origin. There was a substantial cross-cultural difference ($p < .001$) and an equally significant sex difference within the Scottish sample; among Ghanaians the sex difference did not attain significance. This of course merely confirms well-established trends.

As far as the specific predictions are concerned, the outcome provided scant support: (a) All subjects did less well with the blue stimuli; and although difference scores were larger for Ghanaians of both sexes, this fell short of significance. (b) Correlations between difference scores and PFT were not significantly different from zero in both samples. Two main features were modified in the replication, and thus might account for the varying results. One is the exposure time, already mentioned, and the other concerns the color values. No attempt was made to keep these the same as in the first experiment, and it would have been difficult to do so when reproducing color on slides. It is considered that a finding ought to be sufficiently robust to persist when methods are changed. If the phenomenon depends critically on brief exposure times and particular hues, then it is not sufficiently general to be of use in explaining difficulties in space perception.

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THE SELF-ESTEEM INVENTORY AND THE OGLALA SIOUX: A VALIDATION STUDY*

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In Coopersmith's¹ self-theory, success is the most salient determinant of self-esteem. Power, significance, competence, and virtue define success. These criteria are assessed by Coopersmith's Self-Esteem Inventory (a self-report estimate of subjective self-esteem) and Behavior Rating Form (a teacher/parent estimate of children's self-esteem). Within the white American culture, power, significance, and competence are also associated with academic success and peer-group popularity. Correlations between the Self-Esteem Inventory and academic achievement,² peer popularity,³ and the Behavior Rating Form⁴ indicate the validity of the Self-Esteem Inventory for white American youth.

The purpose of the present study was to assess the validity of the Self-Esteem Inventory among Oglala Sioux adolescents. The traditional Sioux value system is based upon bravery, generosity, and individual autonomy, values which have not been changed substantially through acculturation.⁵ It may be that the criteria of success among the Sioux, and therefore of self-esteem, differ from those of white Americans. The difference in value systems may nullify the validity of the Self-Esteem Inventory for the Sioux.

The subjects were 104 Oglala Sioux high-school students (63 males, 41 females) on the Pine Ridge Indian Reservation (South Dakota). Each subject completed a measure of sociometric status, and two self-report inventories, the Self-Esteem Inventory and Thinking About Yourself.⁶ Teachers rated subjects on the Behavior Rating Form. Each subject's grade-point average, on a 100-point scale, was obtained from school records.

Product-moment correlations were computed among the variables. Correla-

* Received in the Editorial Office, Provincetown, Massachusetts, on July 25, 1974. Copyright, 1975, by The Journal Press.

¹ Coopersmith, S. *The Antecedents of Self-Esteem*. San Francisco: Freeman, 1967.

² Coopersmith, S. A method for determining types of self-esteem. *J. Abn. & Soc. Psychol.*, 1959, 59, 87-94.

³ Guardo, C. J. Sociometric status and self-concept in 6th graders. *J. Educ. Res.*, 1969, 62, 320-322.

⁴ Wiest, W. W. A quantitative extension of Heider's theory of cognitive balance applied to interpersonal perception and self-esteem. *Psychol. Mon.*, 1965, 79(14), Whole No. 607.

⁵ Bryde, J. F. *Modern Indian Psychology*. Pine Ridge, S. Dak: Author, 1967.

⁶ Bower, E. M. *Early Identification of Emotionally Handicapped Children in School*. Springfield, Ill.: Thomas, 1960.

tions between the Self-Esteem Inventory and measures of success were not significant. Further examination of the correlations indicated a pattern which was dependent upon the source of the ratings. The self-report measures were correlated ($r = .546, p < .001$). The teacher-completed measures, Behavior Rating Form and grade-point average, were also correlated ($r = .342, p < .01$). Sociometric status, the only peer-rating measure, was uncorrelated with any other variable.

The validity of Coopersmith's Self-Esteem Inventory rests upon its inter-correlations with such measures of success as sociometric status and grade-point average. In the present study, these expected interrelations were not obtained. Thus, the present data suggest that the Self-Esteem Inventory is not a valid measure of self-esteem for Oglala adolescents. Assessment of self-esteem among the Sioux must take into consideration their values, which differ from those of white Americans.

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CODING NON-WESTERN BEHAVIOR STREAM DATA: A PROBLEM OF RELIABILITY*

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Reliably coding naturally occurring non-Western behavior stream data is a problem generally given inadequate consideration. Here, several attempts to contend with this problem are summarized and some evaluative comments on the data-gathering techniques are made. The data were obtained by Spain¹ in northern Nigeria during anthropological fieldwork among the Kanuri. This report is based on the analysis of data obtained by observing a four-year-old Kanuri boy. The method used was similar to that of Barker and Wright.² The behavior stream was recorded manually by observer teams composed of three bilingual Kanuri secondary students who worked in rotating one-hour shifts. Observations occurred over 21 days within a 25-day block for a total of 221½ hours of observation.

Analysis was begun by training four American coders to a high degree of agreement. Coders then worked independently on equal shares of the record. Duplicate notes were secretly included in each coder's allotment. Frequency distributions of the content codes were computed and traditional reliability scores were calculated for each coding division.

The null hypothesis of zero correlation between coders was rejected for each division (largest $p < .05$). Estimates of the data "lost" due to lack of occurrence and unreliability were computed. More data (74 percent) were lost in the most frequently occurring coding division—behavioral episodes. Persons with whom the child interacted (45 coding categories) had a 64 percent loss. Although "action modes" showed a smaller loss because of coding (42 percent), the nine codes of this division were so global that 50 percent of the data were "uncodable."

These results suggest several limitations to coding written observations. Where there are a large number of codes, reliability can be obtained but data are lost. Only data analyzed in terms of simple frequencies were reliable

* Received in the Editorial Office, Provincetown, Massachusetts, on August 8, 1974. Copyright, 1975, by The Journal Press.

¹ Tessler, M. A., O'Barr, W. M., & Spain, D. H. *Tradition and Identity in Changing Africa*. New York: Harper & Row, 1973.

² Barker, R. G., & Wright, H. F. *Midwest and Its Children: The Psychological Ecology of an American Town*. New York: Harper & Row, 1955.

(in contrast to the duration and sequencing data), thus yielding comparatively limited grounds for interpretation. Codes "lost" because of their infrequent occurrence may, by their very rarity, be essential to understanding the child and the culture.

Since these problems seem to be inherent in the two-stage collection-coding process, a procedure commonly used in non-Western research, alternatives must be found which improve the quality of the data before analysis. One practical solution would be to combine the collection-coding process into one stage. Observers may then learn the code and achieve an appropriate level of reliability *prior to* data collection. This alternative is made attractive by recent technological advances in electronic behavioral observation systems.³ The electronic recording of observations, the selection of precoded categories, and the establishment of observer reliability eliminate the error and waste of coding written observations.

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³ Sackett, G. P., Stephenson, E., & Ruppenthal, G. C. Digital data acquisition systems for observing behavior in laboratory and field settings. *Behav. Res. Methodol. & Instrum.*, 1973, 5, 344-348.

REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, 97, 139-140

THE RELATIONSHIP BETWEEN PERSONALITY INVENTORY SCORES AND SELF-RATINGS*

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Many contemporary approaches to personality assessment consist in part of the administration of a lengthy personality inventory having numerous true-false items. The instruments typically measure many traits and are constructed so as to prevent the influence of response sets and distortions. As an alternative to this strategy, a simple, direct approach might be to present the trait or personality dimension to *S* and ask him to evaluate his status. Such an approach was suggested by Allport¹: "If we want to know how people feel, what they experience and what they remember, what their emotions and motives are like, and the reasons for acting as they do, why not ask them?" The purpose of this study is to compare data obtained by Allport's approach to scores from a personality inventory.

The *Ss* in this investigation were 60 male and female college students. The *S* was given a booklet of rating scales, each one labelled and designed to assess the same personality variable measured on the Personality Research Form (Form A).² Each rating scale contained 10 places and was anchored by descriptive comments at each end and at the midpoint. Subjects were asked to review the rating scale, the comments, and to tell us where they belonged on the dimension being evaluated. Upon completion of the rating scales (approximately four minutes), *Ss* were instructed to complete the Personality

* Received in the Editorial Office, Provincetown, Massachusetts, on June 13, 1974. Copyright, 1975, by The Journal Press.

¹ Allport, G. W. *The Use of Personal Documents in Psychological Science*. New York: Social Science Research Council, 1941. P. 37.

² Jackson, D. N. *Personality Research Form*. Goshen, N.Y.: Research Psychologists Press, 1967.

Research Form (Form A) according to the standard directions (approximately 50 minutes). The above order was reversed for half the subjects, and both measures were group-administered at the same time.

The product-moment correlation coefficients between rating scale and Personality Research Form scores on the same traits are as follows: Achievement, $r = .34$; Affiliation, $r = .66$; Aggression, $r = .51$; Autonomy, $r = .36$; Dominance, $r = .46$; Endurance, $r = .52$; Exhibition, $r = .57$; Harm avoidance, $r = .55$; Impulsivity, $r = .67$; Nurturance, $r = .59$; Order, $r = .70$; Play, $r = .47$; Social recognition, $r = .69$; Understanding, $r = .59$. All the r s are significant at the .001 level except those for Achievement and Autonomy which are significant at the .01 level, two-tailed test. While it is apparent that the assessment techniques are not equivalent, all traits indicate a significant degree of correspondence. When one considers that the rating scale approach is economical, lacks deception, contains no unusual items, has high face validity, and involves minimal ethical questions, the amount of information yielded becomes even more remarkable. Since the ultimate test of any assessment instrument is its approximation to actual behavior, the next step is to compare both of the above strategies to behavioral indices.

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SELF-DISCLOSURE AND STRESS AMONG MIDDLE-EASTERN UNIVERSITY STUDENTS*¹

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Jourard² has hypothesized that self-disclosure is causally related to psychological and physical well-being, with low disclosure related to maladjustment and high disclosure associated with mental health. Several studies, as reviewed by Cozby,³ have provided conflicting evidence for the hypothesis. Given such results, it may be that the relationship is actually curvilinear with overdisclosure, as well as underdisclosure, related to negative mental health and medium disclosure connected with positive mental health. True linear relationships may have been obtained if the samples employed were biased and either high or low disclosers were overrepresented. Previous studies have not investigated this possibility, nor have they included techniques to detect departures from linearity.

The study reported here attempted to determine if differences in self-disclosure, as measured by Jourard's Self-Disclosure Questionnaire (JSDQ) in the version devised by Melikian,⁴ are related to symptoms of psychological stress, a measure of well-being which has not been used in previous studies. To assess the presence of symptoms of stress, the 22-item Mental Health Scale (MH) in the version validated by Manis *et al.*⁵ was employed. This scale is similar to those which have been used in almost every study of mental health conducted during the last 30 years, some in non-Western cultures.

Middle-Eastern students enrolled in a required introductory course (Ss that tend to be very Westernized and have been shown to have JSDQ responses which are quite similar to those of American Ss⁴) were voluntarily asked to complete in English the JSDQ, the MH scale, and a personal data sheet. A total of 101 questionnaires were analyzed, 62 from males and 39

* Received in the Editorial Office, Provincetown, Massachusetts, on July 18, 1974. Copyright, 1975, by The Journal Press.

¹ This research was supported by a grant from the Faculty of Arts and Sciences of the American University of Beirut.

² Jourard, S. M. *Self-Disclosure: An Experimental Analysis of the Transparent Self*. New York: Wiley, 1971.

³ Cozby, P. C. Self-disclosure: A literature review. *Psychol. Bull.*, 1973, 79, 73-91.

⁴ Melikian, L. H. Self-disclosure among university students in the Middle East. *J. Soc. Psychol.*, 1962, 57, 257-263.

⁵ Manis, J. G., Brawer, M. J., *et al.* Validating a mental health scale. *Amer. J. Sociol.*, 1962, 28, 108-116.

from females. The mean age was 19.94, $SD = .74$. The range of symptoms reported was from 1 to 12 with a mean of 5.04, $SD = 2.53$, while JSDQ scores ranged from 57 to 606 with a mean of 302.9, $SD = 117.14$.

To test the hypothesis that MH scores would vary with self-disclosure in an inverse linear relationship, JSDQ scores were correlated with MH scores. The result was nonsignificant ($r = .009$). To test the hypothesis that the relationship would be curvilinear with both very high and very low disclosers manifesting a higher number of symptoms, a correlation ratio was computed with JSDQ scores grouped by units of 50. The results indicate a moderately curvilinear relationship with $\eta^2 = .353$, but the curve is in the direction opposite of that predicted, with medium disclosers tending to report more symptoms. There were no significant differences between the sexes in the overall JSDQ or MH scores, nor in the correlations. The results provide no support for either hypothesis.

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GROUP AFFECTIVE STIMULUS VALUE AND COGNITIVE COMPLEXITY*

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In the modification of the Role Repertory test for measuring cognitive complexity, devised by Tripodi and Bieri,¹ subjects are asked to rate significant persons in their lives on eight bipolar trait scales.² It has been found repeatedly that subjects rate significant persons with negative affect higher in complexity than those persons with positive affect. These studies dealt with *individuals* as social stimuli. The purpose of this study was to use identifiable *groups* of people as stimuli for gauging cognitive complexity, the hypothesis being that persons score higher on cognitive complexity when judging groups with negative affect than groups with positive affect.

The respondents were 50 freshmen who were pledged to seven sororities at a Southern university. The investigation involved two stages: (a) The respondents were asked to list the traits they felt applied to the sorority most like their own, and to the sorority least like their own; the traits listed were used as a source necessary for constructing eight bipolar scales. (b) The respondents were asked to judge each of the seven sororities by checking a space on each of these eight bipolar, six interval scales. The bipolar items were sincere-phony, outgoing-shy, studious-nonstudious, fun loving-blah, warm-cold, sophisticated-unsophisticated, friendly-snobish, individualistic-stereotyped. They were then asked to rank the sororities from one to seven "according to how they appeal to you." The two top-ranked sororities for each

* Received in the Editorial Office, Provincetown, Massachusetts, on August 15, 1974. Copyright, 1975, by The Journal Press.

¹ Tripodi, T. & Bieri, J. Cognitive complexity as a function of own and provided constructs. *Psychol. Rep.* 13, 26.

² (a) Du Cette, J. P., & Soucar, E. A further reexamination of the vigilance hypothesis with the use of random shapes as stimuli. *J. Soc. Psychol.*, 1974, 92, 109-113; (b) Irwin, M., Tripodi, T., Bieri, J. Affective stimulus value and cognitive complexity. *J. Personal & Soc. Psychol.* 1967, 35, 444-448; (c) Kelly, G. A. The Psychology of Personal Constructs (Vol. 1). New York: Norton, 1955; (d) Koenig, F. Positive affective stimulus value and accuracy of role perception. *Brit. J. Soc. & Clin. Psychol.*, 1971, 10, 385-386; (e) Koenig, F., & Edmonds, D. Cognitive complexity and effective value of literary stimuli. *Percept. & Motor Skills*, 1972, 35, 947-948; (f) Koenig, F., & Seaman, J. Vigilance and justification as explanation of complex cognition. *J. Soc. Psychol.*, 1974, 93, 75-80; (g) Seaman J., & Koenig, F. A comparison of measures of cognitive complexity. *Sociometry*, in press; (h) Soucar, E. Students' perception of liked and disliked teachers. *Percept. & Motor Skills*, 1970, 31, 19-24; (i) Soucar, E. Vigilance and the perceptions of teachers and students. *Percept. & Motor Skills*, 1971, 32, 83-86.

respondent were considered the groups with positive affect and the two lowest-ranked groups were considered the ones with negative affect for each respondent.

Cognitive complexity scores were computed for the respondent's top-ranked two groups (excluding their own) and the bottom-ranked two groups, according to the procedure given by Irwin *et al.* The least-liked groups had a cognitive complexity score of 18.0 and the most-liked groups had a cognitive complexity score of 22.9. Cognitive complexity is inversely related to the numerical score. The *t* test value of 1.82 indicates that the difference between the means is significant at the .025 level. The hypothesis is supported concerning cognitive complexity and group stimuli with negative affect in that the groups with negative affect were responded to with more complexity than groups with positive affect. This is in keeping with earlier results on the perception of individuals.

If persons tend to articulate negative groups more finely and with more differentiation, does that mean that these groups are less subject to stereotyping? Not necessarily. Conventionally we have assumed that stereotyping entails *oversimplified* generalizations. We have reason to question the oversimplification component of stereotyping from our results, but that does not necessarily mean that the generalization aspect does not exist. The latter point is an empirical question which should be investigated next.

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CURRENT PROBLEMS AND RESOLUTIONS

Under this heading appear summaries of data which, in 500 words or less, would increase our comprehension of socially compelling problems, hopefully move us somewhat closer to a solution, and clearly show promise of transcending their own origin in the Zeitgeist; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

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CONSTRUCTING A DISSONANCE INDEX*

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The measurement of abstract concepts is a difficult and elusive undertaking. Nevertheless, the progress of the behavioral sciences is partially dependent on such endeavors. The present note discusses the construction of a cognitive dissonance index,¹ originally developed by Segal, and modified and refined by this writer.²

The theoretical, methodological, and practical implications of cognitive dissonance are numerous, albeit controversial. According to Festinger,³ inconsistent cognitions elicit an unpleasant psychological state which motivates the individual to reduce, through various means, the incongruence. The purpose in constructing the dissonance index was to provide an innovative technique for measuring uncomfortable psychological states. Toward this end the present discussion will focus upon the selection, scoring, and validation of the items used in the dissonance index.

The first step was to devise a relatively large pool ($N = 50$) of items

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¹ The behavioral science literature frequently uses the terms "scale" and "index" interchangeably. A scale is distinguished from an index in terms of the former's taking advantage of any intensity structure that might exist in the scoring of the items (see Babbie, E. R. *Survey Research Methods*. Belmont, Calif.: Wadsworth, 1974. P. 254).

² Segal, M. T. A study of responses to cognitive dissonance. Unpublished Doctoral dissertation, Indiana University, Bloomington, 1970 (scale modified and refined by present author with permission).

³ Festinger, L. A. *A Theory of Cognitive Dissonance*. Evanston, Ill.: Row, Peterson, 1957.

which appeared to have face (logical) validity. All items, hypothetical and real, contained descriptions of situations apparently arousing an indeterminate amount of incongruence: e.g., "Mr. Jones, who does not read any newspapers or news magazines and who does not own a radio or television set, regards himself an expert on current events;" and "The list of speakers for the Ku Klux Klan convention included the membership chairman of the local chapter of the NAACP. His topic: How to conduct a successful membership drive." One-hundred fifty-nine students responded to each item by checking the appropriate position along a seven point semantic differential scale: e.g., uncomfortable (7): (6): (5): (4): (3): (2): (1) comfortable.

Secondly, the researcher examined the central location, dispersion, skewness, and kurtosis of each item, as well as the bivariate relationships among all items. The variances (ranging between 1.16 and 2.68 produced an indication of the "spread" of responses elicited by each item, while the bivariate associations allowed an empirical determination of whether the items were measuring the same concept. This procedure permitted a selection of only those items demonstrating relative unidimensionality. Nine items were eventually selected. Of the 36 interitem associations, $N(N-1)/2 = 9(8)/2 = 36$, 11 yielded gammas (an appropriate ordinal measure of association) ranging between 0 and +.30, 22 between +.31 and +.60, and three between +.61 and +.80.

After the nine best items were arrived at the next step involved a scoring decision. Each item was given equal weight rather than differential weight for two reasons: (a) The development of the index was exploratory in nature with no available literature suggesting otherwise, and (b) there appeared to be no compelling reasons—in light of the statistical and theoretical information available—to apply unequal weightings to the items.

The present index was internally validated via item analysis. More specifically, each item was correlated with the composite index. All items included in the final index corrected—with the use of gamma—between +.60 and +.89 with the composite index. This step provided a means of assessing the independent contribution of each item to the dissonance index. The administration of this instrument and subsequent data analysis have produced some significant differences between social/demographic variables and dissonance responses.

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RELIGIOUS BELIEFS, RELIGIOUS COMMITMENT, AND PREJUDICE*

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SR. MARY ANNE DIGENAN AND REV. JOHN B. MURRAY

As Rokeach pointed out, many empirical studies have shown significant attitudinal differences between groups of various religious denominations.¹ Some research has modified the impact of these findings; personal religious commitment appears from studies to be multidimensional.^{2,3,4} Allport and Ross developed their Religious Orientation Scale to measure the relationships between commitment to religion, personality, and behavior.⁵

With the use of the Religious Orientation Scale (ROS) as one instrument, 300 college-educated subjects, divided equally by sex, were tested; Rokeach's Dogmatism Scale (DS) and two tests of prejudice—Intolerance-Tolerance, and Worldmindedness—also were administered. The subjects were selected in terms of their position along a continuum of commitment to the Catholic religion: (a) at zero level of commitment, 100 non-catholic students attending a secular college; (b) on the next level up in commitment, 100 Catholic college students; and (c) at the highest level of commitment, 100 Catholic Sisters and Brothers, all of whom had spent at least three years in religious life. Age differences were not significant within or between groups.⁶

Scores on the ROS did not differentiate significantly between the subjects at the three levels of commitment to the Catholic religion. Scores on the intrinsic subscale of the ROS followed generally the order of commitment to the Catholic religion; intrinsic religion theoretically represented interiorized beliefs, love of neighbor, and an emphasis on serving religion rather than making use of it for personal benefit.

* Received in the Editorial Office, Provincetown, Massachusetts, on August 2, 1974.

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¹ Rokeach, M. Part I: Value systems in religion. *Rev. Relig. Res.*, 1969, 11, 3-23.

² Coates, T. J. Personality correlates of religious commitment: A further verification. *J. Soc. Psychol.*, 1973, 89, 159-160.

³ Gardiner, H. W. Catholic sisters and the Edwards Personal Preference Schedule. *J. of Psychol.*, 1973, 85, 97-100.

⁴ Hjelle, L. A. & Aboud, J., Jr. Some personality differences between seminarians and nonseminarians. *J. Soc. Psychol.*, 1970, 80, 279-280.

⁵ Allport, G., & Ross, M. Personal religious orientation and prejudice. *J. Personal. & Soc. Psychol.*, 1967, 5, 432-443.

⁶ Digenan, Sr. M. A. The relationships of religious orientation, prejudice, and dogmatism in three groups of Christian college students. Unpublished Doctoral dissertation, St. John's University, Jamaica, N.Y., 1972.

Sex differences in scores were more clearly revealed than positions on a religious commitment continuum by the Dogmatism Scale (DS). Vacchiano, Strauss, and Hochman in their review of research on the DS had noted that sex differences appeared, possibly because of sex differences in defining dogmatism.⁷ The same authors also remarked on regional differences in DS scores. When the DS scores of the six groups tested, most of whom lived in north-east United States, were compared with those of the New York college sample reported by Rokeach the means and standard deviations were almost identical; the DS scores of Rokeach's other groups were all higher: that is, more dogmatic than the scores of the six groups tested in this investigation.⁸

Sex differences rather than degree of commitment to the Catholic religious value system appeared most clearly in both tests of prejudice, but none of the differences reached acceptable levels of significance. Catholic and non-Catholic college women were more worldminded than all the other groups. The religious, Brothers and Sisters, were most tolerant on the other test of prejudice; but women in each of the three groups—religious, non-Catholic, and Catholic college students—were more tolerant than men.

Whatever the interrelations between prejudice scales, prejudiced behavior, dogmatism scores, religious belief, religious training, and religious commitment, Vanecko's conclusion obtains that such associations are complex and an "open mind" in research is important.^{9,10}

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⁷ Vacchiano, R. B., Strauss, P. S., & Hochman, L. The open and closed mind: Review of dogmatism. *Psychol. Bull.*, 1969, 71, 261-273.

⁸ Rokeach, M. *The Open and Closed Mind*. New York: Basic Books, 1960.

⁹ Vanecko, J. J. Religious behavior and prejudice: Some dimensions and specifications of relationship. *Rev. Relig. Res.*, 1966, 8, 27-37.

¹⁰ Stark, R. Rokeach, religion, and reviewers: Keeping an open mind. *Rev. Relig. Res.*, 1970, 11, 151-154.

AUTHORITARIANISM AND GRAFFITI*

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HENRY SOLOMON AND HOWARD YAGER

With the incidence of graffiti on the rise, it is surprising that few graffiti studies appear in the literature.¹ The present study examined the relationship of the authoritarian personality syndrome to graffiti writing on an urban college campus. Since the authoritarian individual is characterized as conventional,² and the defacing of public property may be an antiestablishment act, one might predict a negative relationship between authoritarianism (as measured by the F Scale) and graffiti writing.

Two coders, blind to the hypothesis of the study, coded photographs of graffiti responses: 151 responses in male toilets, 134 in female toilets, and 164 on the walls of tunnels used as public passageways between campus buildings. (The reliability between coders was .92.)³ In addition, 82 Ss on the same campus responded anonymously first to a graffiti habits questionnaire and then to the F Scale. Thirty-seven percent of the Ss, those who indicated that they wrote graffiti "often" or "whenever I can" and also mentioned the use of two or more instruments (e.g., pen and marker), were designated as hard core (High) graffiti writers; and the remaining Ss were designated as infrequent (Low) graffiti writers.

The mean F Scale score of the Low graffiti writers ($\bar{X} = 88.0$) was significantly lower than that of the High graffiti writers ($\bar{X} = 100.87$; $t = 2.55$, 80 *df*, $p < .02$, two-tailed).

Although unexpected, this finding was in accord with the results of the content analysis. Much of the content coded was seen as evidencing release of repressed sexuality or the sort of aggressive and hostile impulses that are said to be authoritarian concerns.⁴ More than half (55%) of the content consisted of sexual and social comments (much of it antihomosexual and antioutgroup). In addition, 42% of all the graffiti was classified as "modeled" (i.e., answers to previous content or continuation of previous themes), sug-

* Received in the Editorial Office, Provincetown, Massachusetts, on August 26, 1974. Copyright, 1975, by The Journal Press.

¹ e.g., Rudin, L. A., & Harless, M. D. Graffiti and building use: The 1968 election. *Psychol. Rep.*, 1970, 27, 517-18.

² Adorno, T. W., Frenkel-Brunswick, E., Levinson, D. J., & Sanford, R. N. *The Authoritarian Personality*. New York: Harper, 1950.

³ The authors are indebted to Phyllis Schieber Yager for her help.

⁴ See footnote 2.

gesting a kind of conformity which is characteristic of authoritarian individuals.

The notion that graffiti can serve as a release of repressed impulses, originally tied to authoritarianism, can help explain two additional findings of the content analysis. First, it was found that, compared to the more public areas (i.e., tunnels), toilet graffiti were significantly more hostile towards out-groups and previous writers (6.09% *vs.* 28.42%, $\chi^2 = 32.1$, 1 *df*, $p < .001$), and, separately, more concerned with sexuality (18.9% *vs.* 39.3%, $\chi^2 = 20.4$, 1 *df*, $p < .001$). It is reasonable that graffiti that can be categorized as "release of repressed impulses" would be most likely to occur in toilet stalls which provide a cloak of anonymity to the writer and thereby act as releaser cues for aggression and hostility.⁵ Second, it was found that female toilet graffiti were significantly more hostile than those of males (39.6% *vs.* 18.5%, $\chi^2 = 15.4$, 1 *df*, $p < .001$). Thus it seems that the aggressive impulses usually discouraged in women⁶ can find expression in graffiti writing.

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⁵ Zimbardo, P. G. The human choice: Individuation, reason, and order *versus* deindividuation, impulse, and chaos. *Nebr. Sympos. on Motiv.*, 1969, 237-307.

⁶ Bardwick, J. M. *Psychology of Women: A Study of Bio-Cultural Conflicts*. New York: Harper, 1971.

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ABBREVIATIONS OF WORDS USED IN THE TITLES OF JOURNALS

(One-word titles are never abbreviated. The word "the" is not used, nor its equivalent in any other language. The word "of" or its equivalent in other languages is used only to discriminate what would otherwise be identical titles in different languages. The word "and" is always used, but indicated by "&" in the Roman alphabet. Only English words are indicated here, but the corresponding words in other languages should receive a corresponding abbreviation. All abbreviations and all one-word titles should be in italics.)

Abnormal	<i>Abn.</i>	Japanese	<i>Jap.</i>
Abstracts	<i>Abst.</i>	Journal	<i>J.</i>
American	<i>Amer.</i>	Mathematical	<i>Math.</i>
Anatomy	<i>Anat.</i>	Measurement	<i>Meas.</i>
Animal	<i>Anim.</i>	Medical	<i>Med.</i>
Applied	<i>Appl.</i>	Mental	<i>Ment.</i>
Archives	<i>Arch.</i>	Monographs	<i>Monog.</i>
Association	<i>Assoc.</i>	Neurology	<i>Neurol.</i>
Attitude	<i>Attit.</i>	Opinion	<i>Opin.</i>
Australian	<i>Aust.</i>	Orthopsychiatry	<i>Orthopsychiat.</i>
Behavior	<i>Behav.</i>	Personality	<i>Personal.</i>
British	<i>Brit.</i>	Personnel	<i>Person.</i>
Bulletin	<i>Bull.</i>	Philosophy	<i>Philos.</i>
Bureau	<i>Bur.</i>	Physics	<i>Phys.</i>
Canadian	<i>Can.</i>	Physiology	<i>Physiol.</i>
Character	<i>Charac.</i>	Proceedings	<i>Proc.</i>
Children	<i>Child.</i>	Psychiatry	<i>Psychiat.</i>
Chinese	<i>Chin.</i>	Psychoanalysis	<i>Psychoanal.</i>
Clinical	<i>Clin.</i>	Psychology	<i>Psychol.</i>
College	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
Comparative	<i>Comp.</i>	Quarterly	<i>Quart.</i>
Consulting	<i>Consult.</i>	Religious	<i>Relig.</i>
Contributions	<i>Contrib.</i>	Research	<i>Res.</i>
Development	<i>Devel.</i>	Review	<i>Rev.</i>
Educational	<i>Educ.</i>	School	<i>Sch.</i>
Experimental	<i>Exper.</i>	Science	<i>Sci.</i>
General	<i>Gen.</i>	Social	<i>Soc.</i>
Genetic	<i>Genet.</i>	Statistics	<i>Stat.</i>
Indian	<i>Ind.</i>	Studies	<i>Stud.</i>
Industrial	<i>Indus.</i>	Teacher	<i>Teach.</i>
International	<i>Internat.</i>	University	<i>Univ.</i>
Italian	<i>Ital.</i>		

Preparation of Manuscripts for The Journal Press

GENERAL INSTRUCTIONS

1. The proper sequence for the parts of your submitted manuscript is as follows: (a) text, (b) references, (c) footnotes, (d) tables, (e) figures, and (f) figure legends. However, monographs start with a table of contents and may have an acknowledgment page before the text and an appendix immediately after the text.
2. Use heavy typewriter paper, $8\frac{1}{2} \times 11$ inches, double-space *all* lines, and leave margins for editorial work. Do not use onionskin, odd sizes, and abrasive or wax finishes.
3. Submit original typewritten version and one copy. Retain second copy for proofing.
4. Retype any page on which written corrections have been made.
5. Do not begin a sentence with a numeral.
6. A summary at the beginning of the text is required for articles over 500 words.
7. Each quotation should indicate the page number of the original source. The original publisher must give permission for lengthy quotations and use of tables or figures.
8. Do not fold your manuscript.
9. Enclose a submission letter, with a statement that the manuscript is not under consideration elsewhere. If you are unknown to the Editors, kindly give your credentials.

FORMAT AND SPECIFIC INSTRUCTIONS

A. TEXT DIVISIONS

1. THE TITLES OF JOURNAL ARTICLES AND THE MAJOR SUBDIVISIONS OF MONOGRAPHS ARE PRINTED IN TEN-POINT CAPS CENTERED ON THE PAGE

A. THE NEXT SUBDIVISION TITLE IS PRINTED IN CAPS AND SMALL CAPS CENTERED ON THE PAGE

1. *Then Italics, with Principal Words, Upper and Lower Case, Centered on the Page*
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CHANGES IN AUTHORITARIANISM ASSOCIATED WITH UNIVERSITY RESIDENCE IN THE ARAB MIDDLE EAST*¹

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LUTFY N. DIAB AND E. TERRY PROTHRO

SUMMARY

The F scale was administered to a sample of 73 undergraduate Arab students at the American University of Beirut, both at the beginning of their freshman year and toward the end of their senior year to assess changes in authoritarianism.

In line with previous studies, there was a significant decrease in degree of authoritarianism from freshman to senior. However, two interrelated factors were found to be associated with a greater decrease in authoritarianism: namely, initially moderately high F scores and initially responding in Arabic. The shift from responding in Arabic as a freshman to responding in English as a senior, associated with decrease in authoritarianism, suggested the possibility of either underlying shifts in thinking and ideology in the person as a whole or superficial nonintegrated shifts restricted to the specific "language" through which the subject happens to be responding. The latter possibility raises doubts about the practice sometimes followed in cross-cultural research whereby the requirement of stimulus-equivalence is considered as met through translation-equivalence.

A. INTRODUCTION

The most recent thorough attempt at an integrative and comprehensive review of the published and unpublished literature dealing with research on the impact of college on students up till 1967 has been undertaken by Feldman and Newcomb (4, 5). In summarizing their review of this research

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¹ The present study was partly supported by a grant to the American University of Beirut by the Rockefeller Foundation, and constitutes only a part of a larger longitudinal study of attitude and attitude change occurring in university students in the Arab Middle East. Special thanks go to Professors H. C. Kelman and R. Rosenthal for their very helpful suggestions and comments in the course of writing this article while the first author was a Research Fellow at the Center for Middle Eastern Studies at Harvard University during the academic year 1970-1971.

on change and stability during college, Feldman and Newcomb concluded that some changes "are characteristic of nearly all American colleges" and that, among these changes, "most salient are increases in 'openmindedness' (reflected by declining authoritarianism, dogmatism, and prejudice)" (4, p. 48). Also, in their recent review of research and theory on authoritarianism, Kirscht and Dillehay (7), after pointing out the various uncertainties regarding findings associated with F-scale scores, including the problem of acquiescent response set, nevertheless suggested that "... authoritarianism is a significant phenomenon and one worthy of further attention" (4, p. 130).

Though there has been a number of studies concerned with the assessment of authoritarianism among university students in non-Western countries, yet almost all of the studies dealing with changes in authoritarianism associated with the collegiate setting have utilized Western samples. Thus, among the former type of studies, the Arab Middle Eastern culture was described by Prothro and Melkian as one "where authoritarianism begins in the family and expresses itself in the social and political life of the nations" (12, p. 361), and in a more recent study by Diab on experimentally produced small groups in the Arab Middle East, it was found that "... a so-called 'authoritarian' structure, accompanied by an 'authoritarian' set of norms of intragroup relations, developed spontaneously in both ingroups" (3, p. 77). While these and other studies (e.g., 2, 9) describe the Arab Middle East as an authoritarian culture, the question of change and/or stability in authoritarian ideology associated with college residence in the Arab World has not been investigated.

The purpose of the present study was, therefore, to determine whether there were any changes in authoritarianism associated with a four-year period of exposure to a Western-type collegiate setting (i.e., the American University of Beirut) in a non-Western country (i.e., Lebanon) and to look for factors associated with change and/or stability. In the assessment of these changes, the effect of 10 important and relevant background variables was considered: namely, religion, sex, birth order, family size, family income, residence, college major, nationality, ethnic affiliation, and language used in responding to the questionnaire.

B. METHOD

1. Subjects

At the beginning of the academic year 1964-1965, and of a total of 336 students who were citizens of Arab countries and registered as freshmen at the American University of Beirut, 248 subjects volunteered to be tested and,

of these, the responses of only 200 were complete and thus unuseable. By the end of the fourth year of university residence in the spring of 1967-1968, only 73 subjects volunteered again to be retested. Thus, the sample of freshman volunteers constituted 59.52% of the 1964 Arab freshman population, while the sample of senior volunteers which was retested in 1968 constituted 21.72% of the Arab freshman population and 36.50% of the freshman sample.

The importance of considering the differences between "volunteer" and "nonvolunteer" subjects has been pointed out by the research of Rosenthal (13), Rosnow and Rosenthal (15), and Rosenthal and Rosnow (14). For our samples, with the exception of a significantly smaller proportion of Armenians in the senior compared to the freshman sample ($\chi^2 = 4.039$ which, when evaluated at $df = 1$, is significant beyond the .05 level), there were no other significant differences found between nonvolunteers and subjects who volunteered "once" and/or "twice." Thus, it can be assumed here that at least with respect to the remaining nine demographic factors (i.e., religion, sex, birth order, family size, family income, residence, college major, nationality, and language) used in responding to the questionnaire, the 1968 senior sample ($N = 73$) is representative of the 1964 freshman sample ($N = 200$) and that both of these samples are representative of the total 1964 Arab freshman population ($N = 336$).

Data for this study are mainly based on test-retest F scores of the senior sample ($N = 73$) during their freshman and senior years.

2. Procedure

A mimeographed notice, signed by the Dean of Women and the Freshman Advisor, was sent to all Arab freshman students at the beginning of the 1964-1965 academic year, asking them to appear at a certain specified time and place to take a short questionnaire prepared by the Department of Psychology, which, the notice claimed, "... will enable us in the future to ... give you better, more effective advice." A second mimeographed notice, which had to be followed by several reminders and even by individual contacts, was sent during the second semester of the academic year 1967-1968 asking those who volunteered in 1964 as freshman to volunteer again now as seniors.

Apart from securing basic background data on the subjects' religious affiliation, sex, birth order, family size, father's occupation, place of residence, college major, nationality, and ethnic affiliation, the questionnaire material was presented in both English and Arabic, and it was left entirely up to the

subject to respond spontaneously either to the English or to the Arabic version of the questionnaire, or to both (this last possibility was not utilized by any of the subjects tested).

In addition to other items included in the questionnaire, one section consisted of a total of 19 items taken from the F scale (1) and used previously in the Arab culture by Prothro and Melikian (12), and administered to the subjects, both in 1964 and in 1968, with the instructions that the subject indicate his degree of agreement or disagreement with each one of the statements by encircling one of the following four alternatives: "strongly disagree," "disagree," "agree," or "strongly agree." In scoring responses, "strongly disagree" was given a value of 1 and "strongly agree" was given a value of 4. Thus, the range of scores on the version of the F scale used in this study could go from a minimum of 19.00 to a maximum of 76.00, with the latter score representing the highest degree of authoritarianism possible.

C. RESULTS AND DISCUSSION

The overall average F scores for senior nonvolunteers and for senior volunteers during their freshman year in 1964, for all 19 F scale items, was 57.28 and 57.20 respectively, indicating a tendency toward the authoritarian end of the F-scale continuum and showing that the smaller senior sample ($N = 73$) was not significantly different from and therefore highly representative of the larger freshman sample ($N = 200$) in degree of authoritarianism. Also, no significant differences were found in mean F scores between the various subgroupings of the senior nonvolunteers and those of senior volunteers, indicating that the subgroupings in the senior sample were also highly representative of the corresponding subgroupings in the freshman sample in degree of authoritarianism.

Changes in the degree of authoritarianism from the freshman to the senior years are based on test-retest F scores of the sample of senior volunteers in 1964 (i.e., freshman year) and in 1968 (i.e., senior year). There was a highly significant decrease in degree of authoritarianism from the freshman to the senior years for the total sample of senior volunteers, as well as for each of the various subgroupings (all t values are significant at $p < .01$). However, the change cannot be characterized as one from "authoritarianism" to "non-authoritarianism," but rather as a significant shift from strong agreement with authoritarian ideology to not-so-strong an agreement or endorsement, in line with previous findings (6, 8, 10). Also, as suggested by Plant and Telford (11), the possibility exists that there is a general personality change going on regardless of the amount of education experienced by the subjects.

Yet, one might also speculate here that the smaller proportion of subjects volunteering to be retested at the end of the senior year, which was 26.41% less than those who volunteered to be tested at the beginning of the freshman year, could itself be possibly indicative of a change in attitude towards authority from freshman to senior. Thus, it is quite possible that subjects who did not volunteer to be retested could have changed even more than those who volunteered, as would be suggested by the work of Rosenthal and others (14).

The magnitude of the mean F scores reported for the various subgroupings of senior volunteers in 1964 and in 1968 shows that there appears to be an association between the language used in responding to the questionnaire and the degree of authoritarianism exhibited. Thus, the highest mean F scores were obtained for subjects who chose to respond to the questionnaire in Arabic. In fact, there appears to be a consistently significant association between responding in Arabic and exhibiting a rather high degree of authoritarianism, *both* at the beginning of the freshman year, as well as toward the end of the senior year. Thus, for the senior sample in 1964, "Arabic" respondents ($N = 31$) and "English" respondents ($N = 42$) in 1964 had mean F scores of 61.26 and 54.21, respectively (i.e., a mean difference of 7.05), which yields a t value of 4.299, significant beyond the .001 level. Also, for the senior sample in 1968, "Arabic" respondents ($N = 16$) and "English" respondents ($N = 57$) in 1968 had mean F scores of 57.19 and 50.17, respectively (i.e., a mean difference of 7.02), which yields a t value of 3.408, significant beyond the .01 level.

Therefore, in order to look for factors associated with change or lack of change in degree of authoritarianism from freshman to senior year, two factors were taken into consideration: (a) initial degree of authoritarianism and (b) initial language used in responding to the questionnaire. In terms of initial degree of authoritarianism, of which four score ranges were defined from high to low (i.e., 65-73, 56-64, 47-55, and 38-46 F-score ranges), not only was the decrease in mean F scores greater for the high end of the F-score range than for the low end but, in fact, there was even an increase (though not a significant one) rather than a decrease in the case of the lowest F-score range (i.e., 38-46) from freshman to senior. However, the really important finding was that which argues against regression towards the mean over the four-year period showing that the greatest decrease in mean F scores from freshman to senior applied to the group with the second highest or moderately high, and not the highest, initial mean F score. Also, while the proportion of subjects responding in Arabic at the low end of the F-score range (i.e.,

38-46) was zero, it reached as high as 76.92% and 53.85% for the high end of the range (i.e., 65-73) during the freshman and the senior years, respectively. In fact, out of the 31 subjects in the sample who responded in Arabic in 1964, 21 subjects (i.e. 67.74%) had scores above the sample mean F score of 57.20 in 1964 compared to only 14 subjects (i.e., 33.33%) with above-mean F scores out of the group who responded in English ($\chi^2 = 8.461$, significant beyond the .01 level for one degree of freedom). In other words, the higher the initial degree of authoritarianism, the greater is the likelihood of having responded in Arabic, and *vice versa*.

Similarly, subjects were classified according to language used (i.e., Arabic or English) in responding to the questionnaire in 1964 and 1968. While there was a significant decrease from freshman to senior in mean F scores for all language groupings for which *t* values were computed, yet relatively greater decreases in authoritarianism were associated with shifts from answering in Arabic in 1964 as a freshman to answering in English in 1968 as a senior. Thus, there appears to be an association between changes in "language used" to respond to the questionnaire and decrease in authoritarianism over the four-year period of university residence. In other words, larger decreases in authoritarianism during the four-year university residence are associated with initially moderately high F scores and with shifts in language used in responding to the questionnaire, particularly shifting from Arabic to English. Conversely, smaller decreases in authoritarianism are associated with initially low F scores and with initially responding in English.

Thus, in short, two interrelated factors were found to be associated with greater decrease in authoritarianism from freshman to senior: namely, (a) initially moderately high F scores and (b) initially responding to the questionnaire in Arabic. Subjects with initially low F scores and/or initial responses in English to the questionnaire tended to show over the four-year period of university residence smaller decreases or even a slight increase in authoritarianism. Subjects who responded in English in 1964 and in 1968 were, to begin with, already at the lowest end of the F-score range and, consequently, they were expected to change very little, if at all.

Thus, the move from responding in Arabic to responding in English from freshman to senior, may be an index of openness to the collegiate experience or, even more significantly, may mean a moving away from an emphasis on traditional values. Since the mere use of language itself conveys certain value-orientations, such as traditional for Arabic *versus* nontraditional for English, it is possible that shifts in language use itself may underlie or be associated with a shift in thinking and ideology.

On the other hand, a word of caution is in order here concerning the use of translated scales, tests, or measures as being equivalent: namely, the possibility that different response patterns may be given by subjects simply as a result of whether they are asked to respond to a questionnaire or scale in their native language or in a second foreign language. In cross-cultural studies, it is therefore suggested that the investigator be aware that translation-equivalence does not necessarily guarantee stimulus-equivalence and, consequently, the practice of comparing or combining results for subjects responding to what appears to be the same instrument, translated in two or more different languages, may not be justified.

Finally, it must be stated that a number of factors suggest the need for caution in generalizing from these findings. Our sample of students is not typical of Middle East University students and the American University of Beirut is not typical of Middle East or of American universities. Also, there was a war in the Middle East in June of 1967 while the students in our sample were ending their junior year, a variable which would have possibly affected our results on changes in acceptance of authoritarian ideology. Nevertheless, we do find it significant that even in so unusual a setting, the changes that took place were in the same direction as those occurring in studies of Western samples. Though, however, several happenings took place since 1968 (e.g., about a one-month student strike against the administration in 1971 and a similar two-month student strike in 1974) which may raise questions as to the applicability of these findings on current samples.

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ATTITUDES TOWARD HOMOSEXUALITY AMONG WEST INDIAN MALE AND FEMALE COLLEGE STUDENTS* 1 2

University of Waterloo

MARVIN BROWN³ AND DONALD M. AMOROSO

SUMMARY

Measures of attitudes toward homosexuality, sexual liberalism-conservatism, and sex guilt, previously given to Canadian and Brazilian samples, were administered to 69 male and 51 female West Indian college students. The West Indian males scored significantly more antihomosexual than the Canadians and significantly less so than the Brazilians. In all other respects the pattern of results was very similar in the three countries. Churchill's hypotheses relating cultural sex-negativism, sex-role stereotyping, and anti-homosexual prejudice were again supported. West Indian females scored less antihomosexual and less guilty about sex than the males. In all other respects the male and female results were very similar.

A. INTRODUCTION

Churchill (1) has discussed the differences between cultures in attitudes toward various sexual practices and, in particular, homosexuality. Our previous studies (2, 3) have examined attitudes toward homosexuality and their correlates among Canadian and Brazilian male college students. This work was carried out in the context of Churchill's theory relating cultural sex-negativism, sex-stereotyping, and homoerotophobia. The findings generally supported Churchill's arguments: In both countries antihomosexual (anti-H) subjects were more disapproving of various sexual practices and reported greater personal sex guilt than did subjects not opposed to homosexuality (pro-H). The anti-H subjects also stereotyped the sexes more and were more

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¹ We appreciate John Dunbar's very helpful comments on an earlier draft of this paper.

² The data were collected and the paper was written while the first author was on leave at The University of British Columbia and the second author was on leave at The University of the West Indies at Trinidad. We thank the heads of the Faculties of Social Science, Engineering, and Agriculture of the University of the West Indies for facilitating the collection of the data.

³ Requests for reprints should be sent to the first author at the address shown at the end of this article.

willing to label a male who exhibited what they regarded as a single feminine characteristic as homosexual than were the pro-H subjects. This was true in both countries. As expected, the Brazilians showed more antihomosexual prejudice and assigned much higher probabilities to a "feminine" male being homosexual than did the Canadians.

The present study seeks to extend this investigation to West Indian subjects. It also explores differences between males and females in their attitudes toward homosexuality.

B. METHOD

1. Subjects

The subjects were 69 males and 51 females enrolled at the University of the West Indies in Trinidad. They were obtained by asking them to participate in a study of attitudes toward sex. All the females and two thirds of the males were in Arts or Science. The other males were in professional programs (Engineering and Agriculture). Comparisons between the males in the professional programs and those in Arts and Science revealed no differences in attitudes toward homosexuality, so the two groups were combined. Four members of each sex returned unusable questionnaires and were discarded. The Canadian and Brazilian samples were those used previously [see Dunbar, Brown, and Amoroso (2) and Dunbar, Brown, and Vuorinen (3)].

2. Procedure

The general procedures and the questionnaires used were the same as those used in the Canadian and Brazilian studies. In brief, Likert-type scales were used to measure (a) attitudes toward homosexuality (H Scale), (b) sexual liberalism-conservatism (L-C Scale), and (c) attitudes toward subjects' own sexual impulses (Concern-Guilt, C-G Scale). To measure readiness to impute homosexuality, subjects were presented with lists of 21 personality traits (e.g., sensitive, aggressive), 12 hobbies or interests (e.g., cooking, hunting), and seven professions (e.g., mechanic, nurse). They were asked to indicate for each whether they thought it more appropriate for men or women, or whether it applied equally to both sexes. Finally, for each trait, hobby, and profession designated as feminine, the subjects were asked to indicate the probability that a male exhibiting that characteristic was homosexual.

C. RESULTS

1. Cross-Cultural Comparisons

On the H-Scale the West Indian males' mean score ($M = 48.92$, $SD = 16.10$) fell between those of the Brazilian ($M = 53.14$, $SD = 12.47$, $N = 112$) and the Canadian ($M = 36.52$, $SD = 11.85$, $N = 126$) subjects.

Newman-Keuls tests (8) showed that the West Indian males were significantly more antihomosexual than the Canadians ($p < .01$) and significantly less than the Brazilians ($p < .05$). The difference between the Canadians and the Brazilians is also significant ($p < .01$).

Table 1 gives the intercorrelations between the three attitude scales. The same pattern is shown by the West Indian males, the Brazilians, and the Canadians; none of the differences between samples is statistically significant. In each sample there is a moderate positive correlation between antihomosexual attitudes and sexual conservatism and a relationship of about the same magnitude between conservatism and personal sex guilt. There is a positive but less strong relationship between sex guilt and antihomosexual prejudice.

In the Canadian and Brazilian studies, subjects scoring in the upper and lower quartiles of the distribution of H-Scale scores were selected to test hypotheses suggested by Churchill. The smaller size of the West Indian sample required that the extreme thirds of the distribution be used for this purpose. Inspection of the data indicated that the results were very similar whether extreme quartiles or thirds were used. There was a clear tendency for the anti-H males, so defined, to be much more sexually conservative (L-C Scale: $M = 62.38$, $SD = 15.00$) and, hence, disapproving of various heterosexual practices, than the pro-H subjects ($M = 41.24$, $SD = 10.46$; $t = 5.34$, $df = 41$, $p < .001$). The anti-H group also reported significantly greater sex guilt (C-G Scale: $M = 42.81$, $SD = 10.14$) than the pro-H group ($M = 37.45$, $SD = 10.34$; $t = 1.69$, $df = 41$, $p < .05$, one-tailed). These differences are very similar to those previously found among the Canadian and Brazilians.

Table 2 gives the number of personality traits, hobbies, and professions classified as male- or female-appropriate or as irrelevant with respect to sex by both anti- and pro-H subjects. As was the case with both the Canadian and Brazilian groups, the male West Indian anti-H subjects showed a much greater degree of sex-role assignment than did the pro-H subjects. The anti-H group assigned more traits, hobbies, and professions to either males or females and designated many fewer as irrelevant to sex than did the pro-H subjects. Analyses of variance of the number of items designated "irrelevant" showed no significant differences between countries and no country-by-attitude interactions.

The probability estimate section of the questionnaire was omitted by a number of subjects, leaving only 9-13 subjects per cell for these data. There were no differences between anti- and pro-H subjects in willingness to label a male exhibiting a single feminine characteristic as homosexual. Thus, the

TABLE 1
INTERCORRELATIONS BETWEEN ATTITUDES

Attitude scale	Attitude scales	
	L-C	C-G
Homosexuality scale		
Canada	.39**	.24*
Brazil	.41**	.17
West Indies—Male	.58**	.32**
West Indies—Female	.61**	.17
Liberalism-Conservatism scale		
Canada		.44**
Brazil		.50**
West Indies—Male		.58**
West Indies—Female		.50**

Note: H = Homosexuality scale; L-C = Liberalism-Conservatism scale; and C-G = Concern-Guilt scale.

* $p < .05$.

** $p < .01$.

differences previously found among Canadians and Brazilians were not found among the West Indian males.

2. Sex Differences

The females ($M = 44.85$, $SD = 11.55$) scored lower than the males ($M = 48.92$, $SD = 16.10$; $t = 1.45$, $df = 109$, $p < .10$) on the H-Scale. A Kolmogorov-Smirnov analysis (6) showed that the female distribution of scores was significantly less antihomosexual than the male distribution. The females also scored lower, but not significantly so, on the C-G scale (females: $M = 38.37$, $SD = 9.79$; males: $M = 40.94$, $SD = 10.54$; $t = 1.29$, $df = 109$, $p < .10$). The two groups scored almost exactly the same on the L-C scale (females: $M = 51.39$, $SD = 12.94$; males: $M = 51.53$, $SD = 15.94$; $t = .04$, ns).

Table 1 shows that the intercorrelations between the three scales among the females were very similar to those involving the males; none of the sex differences was statistically significant.

Table 2 shows that among females the differences between anti-H and pro-H subjects were very similar to those found among pro- and anti-H males in number of traits, hobbies, and professions checked as male- or female-appropriate. Analyses of variance revealed no significant sex differences nor any sex-by-attitude interactions.

Like the males, relatively few females completed the probability estimate part of the questionnaire. There was a tendency for anti-H females to be less willing to label a male exhibiting a single feminine characteristic homosexual than pro-H subjects, but none of the differences was significant.

TABLE 2
SEX-ROLE ASSIGNMENTS OF WEST INDIAN SUBJECTS

Category		Males		Females	
		Anti-H	Pro-H	Anti-H	Pro-H
Masculine	Traits	<i>M</i>			
		<i>SD</i>			
		7.76	4.64***	6.60	4.27**
	Hobbies	<i>M</i>			
		<i>SD</i>			
		2.95	3.22	3.33	3.81
Professions		<i>M</i>			
		<i>SD</i>			
		5.81	5.00*	5.93	4.33**
		<i>M</i>			
		<i>SD</i>			
		1.66	1.72	1.83	2.77**
Feminine	Traits	<i>M</i>			
		<i>SD</i>			
		3.71	2.82***	3.33	2.93
	Hobbies	<i>M</i>			
		<i>SD</i>			
		.78	1.37	.98	.88
Professions		<i>M</i>			
		<i>SD</i>			
		6.76	4.95*	6.00	4.73
		<i>M</i>			
		<i>SD</i>			
		2.84	4.45	4.36	3.97
Irrelevant	Traits	<i>M</i>			
		<i>SD</i>			
		3.71	3.18*	3.60	3.13*
	Hobbies	<i>M</i>			
		<i>SD</i>			
		.56	1.44	.83	1.06
Professions		<i>M</i>			
		<i>SD</i>			
		2.29	1.64**	2.00	1.07**
		<i>M</i>			
		<i>SD</i>			
		1.06	.95	.93	1.33
Professions		<i>M</i>			
		<i>SD</i>			
		6.38	10.91**	8.13	11.67*
		<i>M</i>			
		<i>SD</i>			
		5.29	7.58	6.28	6.75
Professions		<i>M</i>			
		<i>SD</i>			
		2.48	3.68*	2.33	3.00**
		<i>M</i>			
		<i>SD</i>			
		1.99	3.05	2.44	3.50
Professions		<i>M</i>			
		<i>SD</i>			
		1.00	2.55***	1.67	3.00**
			2.13	1.54	1.96

Note: Anti-H = antihomosexual; and pro-H = prohomosexual.

* $p < .10$.

** $p < .05$.

*** Difference between anti-H and pro-H is significant at the .01 level by one-tail t test.

D. DISCUSSION

Churchill's (1) theory regarding the relationship between cultural "sex-negativism," sex-role stereotyping, and antihomosexual attitudes is generally supported in all three countries. Indeed, the pattern of results is very similar in the three countries. The three male samples do, however, differ significantly in antihomosexual attitudes, the scores of the West Indians being less than those of the Brazilian and more than those of the Canadians.

Wagley (7) argues that norms concerning narrowly defined sex-appropriate behaviors are very salient throughout Latin America. For males, such norms are reflected in strong notions of "machismo" and in antihomosexual prejudice; hence the very extreme antihomosexual attitudes of the Brazilians. The West Indians have a strong Latin American heritage and ought, therefore, to hold attitudes similar to the Brazilians. But there is also a strong North American influence in the West Indies. Gilder (5) suggests that the view that homosexuality is merely "an alternative form of sexual expression to which all civilized men should be tolerant" (5, p. 227) seems to be gaining currency in North America. Such a view would tend to soften the relatively harder

Latin American position. The conjunction of these two influences may, then, account for the intermediate position vis-à-vis homosexuality of the West Indian males.

Churchill's concept has more difficulty with the female data of this study. The females are less antihomosexual and also report less sex guilt than the males, but the sexes do not differ in general sexual liberalism as would have been expected if cultural sex negativism were the only factor involved. While a cultural explanation is not fully adequate, neither is a more "psychodynamic" one [see, for example, Anna Freud's discussion of defense mechanisms (4); also Wolman (9, p. 146)]. Such an explanation would argue that the anxiety associated with unconscious homosexual tendencies would, by virtue of projection, lead to antihomosexuality. But this argument would require larger sex differences than were obtained. Neither our data nor any other that we are familiar with cast any light on this question.

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RETURNING A DROPPED OBJECT: EFFECT OF RESPONSE COST AND NUMBER OF POTENTIAL HELPERS*¹

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SUMMARY

Two experiments were conducted to study the behavior of subjects in front of whom an object was accidentally dropped. In the first, drops were made in front of 19 individuals and 13 groups of two or three. All but two subjects responded by returning the object to the dropper. Mean latency for individuals was smaller than that for groups. In the second experiment either a box of Tampax or a purse was dropped in front of 44 subjects. The box of Tampax was returned less frequently than the purse ($p < .02$).

A. INTRODUCTION

Schneider (3) has described a simple technique for the study of helping behavior, in which an experimenter drops a glove, apparently accidentally. Nearly all of the individuals in front of whom a drop was made stopped to pick up the glove and returned it to its owner. Schneider argued that this situation satisfied the three conditions laid down by Schwartz as giving rise to maximal helping behavior: the helper recognizes (a) that the helpee cannot help himself (dependency), (b) that he is the only person in a position to help (responsibility), and (c) that he runs no risk of incurring costs if he helps (no-risk). The present two experiments were undertaken to discover how helping behavior was affected if the latter two conditions (responsibility and no-risk) were not met.

B. EXPERIMENT 1: EFFECT ON LATENCY OF NUMBER OF POTENTIAL HELPERS

1. Method

In the first experiment a situation was devised in which responsibility for picking up the dropped object belonged either to a single individual or to two

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or three. It was expected that diffusion of responsibility (2) would delay helping behavior in the latter case. The experimenter² emerged from a gateway onto a path near the student's union so that he was walking in front of, and in the same direction as, the subject, who was unaware of his participation in the experiment. *E*'s exit was timed so that he was about eight feet in front of *S*. He then dropped a pencil case. An observer timed the period from the moment the object hit the ground until *S* either picked it up or called to *E* to tell him that he had dropped something. He also judged the distance between *E* and *S*. When the judged distance was not within six inches of eight feet, the observation was rejected. Drops were made in front of individuals or in front of groups of two or three persons walking together. Two students, a male and a female, acted as experimenters. In each trial experimenter and subject(s) were of the same sex. Drops were made in front of 19 individuals and 13 groups. Two individuals did not return the object, and these trials were excluded from analysis. The helping rate was, therefore, 94%.

2. Results

Mean latency for individuals was 1.8 sec ($SD = .57$) and for groups 3.5 sec ($SD = .29$). There was practically no overlap between the distributions ($t = 9.721$, $df = 28$, $p < .001$).

C. EXPERIMENT 2: EFFECT ON HELPING RATE OF AN EMBARRASSING OBJECT

1. Method

In the second experiment an attempt was made to reduce the helping rate by increasing the cost to the subject of the helping act [see Allen (1) and Tipton and Jenkins (4)]. This was done by having a female experimenter drop a box of Tampax in front of the subject. It was expected that the subject, if he chose to return the object, would run the risk of causing embarrassment to the dropper and of being embarrassed himself. Such a cost might deter him from the act of helping. Four female students acted as experimenters and collected data independently. The experiment took place in a lightly frequented street near a shop. The experimenter chatted with a confederate until a subject approached. She then terminated the conversation in a natural manner and set off up the street. The drop was made well clear of the confederate. A box of Tampax was dropped in front of 11 male and 11

² All experimenters and subjects in both experiments reported here were white.

female subjects. In a control condition a purse was dropped in front of 11 subjects of each sex.

2. Results

The effect of the experimental manipulation was to reduce helping rate to 59%. The helping rate in the control condition was 95%. Where only one of the 22 subjects in the control condition failed to return the purse, nine subjects in the experimental condition failed to return the box of Tampax ($\chi^2 = 6.341$, $df = 1$, $p < .02$). There was no difference between the helping rates of males and females. The reaction of one of the male subjects illustrates the effect of the nature of the object on willingness to help. He picked up the Tampax, but rapidly replaced it on the pavement when he saw what it was.

D. CONCLUSIONS

These two exploratory experiments show the dropped object technique to be a simple natural device which has great promise as an aid towards the analysis of those rapid decision processes that occur in a person confronted by the responsibility for helping another. The method provides a study of reaction times in a natural setting, and it might be expected that response latencies are determined by the same factors as determine reaction times in the laboratory. In the first experiment, the lone subject has to decide whether to pick up the object or leave it, while the subject in a group has to decide (a) whether the object should be picked up and (b) who should pick it up. The extra information processing step may be the reason for the longer latency in the latter condition [cf. Welford (5, chap. 3)]. The second experiment shows that response cost affects the decision to help in a simple situation, as well as in a more complex one, such as that used by Tipton and Jenkins (4).

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FIELD STUDY OF THE RELATIONSHIP BETWEEN STATUS DISCREPANCY AND PROXEMIC BEHAVIOR*

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SUMMARY

Observations of the proxemic behavior (angle of orientation and distance between interacting pairs) of 88 interacting pairs of equivalent status (ES) and 33 pairs of discrepant status (DS) male employees of a utility firm were made while these Ss attended a series of six biweekly training meetings. It was expected that ES pairs would have a more direct orientation and would stand at a closer distance than DS pairs. All observations were made by a single male O who was in attendance at each meeting. The distance and angle of orientation of all pairs of Ss who interacted within 30 minutes prior to and 15 minutes after each meeting were coded with the use of scales developed by Hall. As expected, ES pairs assumed a significantly more direct angle of orientation than DS pairs ($p < .01$), but failed to stand at a closer distance. These results suggest that angle of orientation may be more sensitive than distance to status differences.

A. INTRODUCTION

In his review of the literature on the relationship between attitudes and proxemic behavior Mehrabian (9) has suggested that both the distance between and body orientation of two communicators may be related to their status discrepancy. However, the two relevant studies reviewed by Mehrabian produced mixed results. While Lott and Sommer (7) observed a closer distance between people of equal status than between people of unequal status, Mehrabian (8) failed to find any relationship between the status of a communicator relative to his addressee and the distance of the former to the latter. He suggested that these two findings may still be consistent because the experimental conditions which were explored in his own (8) study always involved an unequal or discrepant status between the communicators (i.e., the addressee was either of a higher or lower status than the communicator,

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or the discrepancy in status was the same in all conditions). In view of this, the following should be true: equivalent status dyads stand at a closer distance during interaction than discrepant status pairs.

Sommer (10), in his review of status relationships and spatial behavior, has suggested that body orientation may be more sensitive to status differences than the distance between a pair. In the only study which has examined the relationship between status and body orientation, Mehrabian (8) found that the body orientation of a communicator was more direct with a high-status than with a low-status addressee, regardless of whether the addressee is liked or disliked. Again, however, Mehrabian's observations were limited to discrepant status pairs. Thus, no data are available on the relationship between body orientation and status discrepancy. On the basis of the suggestion of Sommer, it was expected that equivalent status pairs would assume a more direct angle of orientation during interaction than discrepant status pairs.

With the exception of the anecdotal evidence of the anthropologist Edward T. Hall (3, 5) and the work of Aiello and Jones (1) and Jones (6), most investigations of proxemic behavior have been conducted in laboratory settings. While such settings most often offer the advantages of greater control and standardization of the conditions of observation and even though measurement of distance and angle of orientation can be made there unobtrusively, questions about the external validity of such data must still be raised. For this reason, it was considered desirable to test the hypotheses outlined above in a field setting.

B. METHOD

1. Subjects

Ss were 23 first level supervisors and 26 nonsupervisory employees of a large utility firm who were attending a series of six biweekly training sessions. To provide a check on the general representativeness of the proxemic behavior of the Ss who attended the meetings, a separate control sample of 50 additional pairs of employees were observed in a separate courtyard setting of the same firm during a lunch break. All Ss were male Caucasians. Ss who attended the training meetings were classified as having *high* organizational status (supervisors) or low status (nonsupervisory employees). If both members of an observed pair were either high status or low status they were classified as an Equivalent Status (ES) pair. If one member of a pair was

of high status and the other low this pair was included in the sample of Discrepant Status (DS) pairs. This procedure yielded a total of 88 ES pairs and 33 DS pairs. No pair of Ss was observed more than once at each meeting.

2. Procedure

The distance and angle of orientation between all S pairs was coded with the use of the scheme proposed by Hall (4). Angle of orientation was scored with the use of a scale ranging from 0 to 8, each interval along the scale representing a difference of 45 degrees. Thus, a score of 0 would be assigned to two bodies in a direct, fact-to-face position; a score of 8 would be assigned to two bodies back-to-back, and a score of 4 to two bodies standing side-by-side. Distance judgments were recorded on a scale running from 0 to 7, each interval on the scale representing a distance of about one-half foot. A score of 0 would be assigned to two bodies within contact distance. A score of 7 would be assigned to two bodies beyond touching distance when reaching, a distance of roughly three and one-half feet or more. All distance observations were recorded as though the interactants were of equal height and as though their noses were pointing straight forward parallel with their shoulders.

The observation of the interaction of the Equivalent Status (ES) and Discrepant Status (DS) pairs took place prior to and after each of six biweekly training meetings. The setting for all meetings was a conference room at an office complex of a utility firm. This room is about 30 feet wide and 70 feet long. Approximately one-half of this area was occupied by tables and chairs arranged in horseshoe fashion. In addition, a coffee area was located in the rear portion where informal interaction could occur prior to and subsequent to each meeting.

While making observations, the O was located at or near the front of this room. All observations in this setting were made within 30 minutes before and 15 minutes after each meeting. To be included, any interacting pair had to be standing in a stationary position within the coffee area.

The observations of the control sample of 50 standing pairs of interacting male Ss took place during two noon lunch periods. The setting for these observations was an open air courtyard at the same office complex. To make these observations the O situated himself in the southeast corner of this courtyard near some patio tables and chairs.

A single male O made all observations. He is a manager at the utility firm and attended the six meetings as a consultant to his departmental representative. This allowed observations to be made in an unobtrusive manner. To

minimize observer bias, the *O* was not informed of the hypotheses. He was trained in the use of the observation technique by making practice observations of both transparencies of interacting pairs and live pairs at a local college campus. As a check on the reliability of the *O*'s judgments of angle and distance, the *O* and the investigator, who was previously trained in the use of Hall's coding scheme, simultaneously observed and coded the angle of orientation and distance of 30 stationary interacting pairs on the same campus. The percent of agreement between these two judges was .93 and .83 for distance and angle of orientation, respectively. The Pearson product-moment correlation was .94 for judgments of the angle of orientation and .84 for the coding of distance. It was felt that these figures were sufficiently high to place some faith in the accuracy of the field observations made by the *O*.

C. RESULTS

One-tailed *t* tests on the difference between independent sample means were calculated to check for the presence of any significant differences in both the angle of orientation and the distance between pairs of ES and DS *Ss* and between ES pairs, DS pairs, and the control sample. As predicted, the mean angle of orientation between ES pairs ($\bar{x} = 1.47$) was significantly less ($t = 3.94, df = 86, p < .01$) than that between DS pairs ($\bar{x} = 2.58$). In addition, both supervisor-supervisor pairs ($\bar{x} = 1.24$) and pairs of nonsupervisory employees ($\bar{x} = 1.67$) had significantly more direct orientations than DS pairs ($t = 4.47, df = 77, p < .01$ and $t = 3.03, df = 77, p < .05$). Furthermore, when the mean angle of orientation in the combined sample of ES pairs and DS pairs ($\bar{x} = 1.77$) was compared with that of the 50 control pairs ($\bar{x} = 1.72$), no significant difference was obtained ($t = .22, df = 164, ns$). This supports the contention that the angle of orientation of *Ss* who attended the meetings was representative of the general angle of orientation in this specific organizational setting.

A comparison of the mean distance between ES pairs and between DS pairs failed to provide support for the prediction that ES pairs would stand closer than DS pairs. There was no significant difference ($t = .92, df = 119, ns$) between the mean distance of ES pairs ($\bar{x} = 2.80$) and DS pairs ($\bar{x} = 3.09$). However, there was a significant difference in the mean distance ($t = 1.71, df = 77, p < .05$) between pairs of low status pairs and that of the high status pairs ($\bar{x} = 3.12$). Finally, there was no significant differ-

ence ($t = .00$, $df = 169$, ns) between the mean distance of the combined sample of ES and DS pairs ($\bar{x} = 2.88$) and the control sample ($\bar{x} = 2.88$).

D. DISCUSSION

The results of this investigation support the hypothesis that equivalent status communicators assume a more direct or intimate angle of orientation during interaction than communicators of discrepant status. However, the results revealed no uniform difference in the distance between these two groups of pairs. To some extent, the absence of this difference contradicts the findings of Mehrabian (8) and Lott and Sommer (7). Perhaps, as Sommer suggested, the angle of orientation between communicators is simply more sensitive to their relative status than distance. Nevertheless, it should be noted that pairs of low status communicators did stand significantly closer than both discrepant status pairs and high status pairs. In contrast, low status pairs assumed a less direct angle of orientation than high status pairs, although this angle was still more direct than that assumed by discrepant status pairs. This pattern of results may be a reflection of the tendency of distance, eye contact, and angle of orientation to assume an equilibrium level as Argyle and Dean (2) have claimed. In this case, it would imply that a more direct angle of orientation in high status pairs was accompanied by a greater distance; the opposite would be true among low status pairs. However, this equilibrium hypothesis was only partially supported by the Pearson product-moment correlations between distance and angle of orientation in these two groups. In the sample of high status pairs, this figure was only $-.08$.

In the sample of low status pairs, this correlation was similarly low ($r = .03$). While it was larger in the sample of DS pairs ($r = .25$), it also failed to be significant. Furthermore, when the high status pairs were combined with low status pairs in the equivalent status sample, the correlation still failed to show a significant relationship ($r = .09$). However, in the control sample the correlation between angle and distance was significant and in the predicted direction ($r = -.552$, $p < .01$). Thus, it would appear that there may have been some feature(s) of the conference room setting or some characteristic(s) of the employees who attended the meetings which interfered with the tendency for proxemic behavior to assume an equilibrium.

For this reason, despite the absence of any significant differences between either the mean angle or distance of the pairs who attended the meetings and the control pairs, it appears that the proxemic behavior of those in attendance at the meetings may have been only partly representative of proxemic behav-

ior within this population. The reasons for this difference may have been revealed if it had been possible to classify control Ss on the basis of their organizational status.

Perhaps the most interesting feature of this study is that it partially supports the findings of Lott and Sommer's (7) and Mehrabian's (8) laboratory studies of status and proxemic behavior. Because of conditions in the laboratory which frequently produce low external validity or make generalizability to natural settings risky, it is an important feature. In this specific case, it was possible to observe groups of individuals which had a fairly distinct status level difference and yet which had high intragroup status homogeneity. In addition, all observations were made in the same subsetting under virtually identical conditions. Even the potentially confounding effects of observing a disproportionate number of pairs of a given type either early or late in the series of meetings were minimized by sampling roughly equal proportions at each meeting. These features permitted a fairly rigorous test of the hypotheses.

Since no females could be observed in this study and since Mehrabian (8) concluded that there are significant differences in the proxemic behavior of males and females, it would be unwarranted to generalize the present findings to females. It should also be obvious that the results would have no validity for residents of other countries or cultures. Unfortunately, with the exception of anecdotal observations by Hall (5) and a study which used foreign students attending an American university (11), most empirical observations of proxemic behavior have been restricted to residents of North American countries.

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EFFECTS OF THE PRESENCE OF CHILDREN ON ADULTS' HELPING BEHAVIOR AND COMPLIANCE: TWO FIELD STUDIES*¹

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SUMMARY

Two field studies investigated complementary aspects of the notion that the presence of children affects adults' helping behavior. In the first, 33 lone women (19 accompanied, 14 unaccompanied by a child), 28 pairs of women (14 with, 14 without a child), and 30 mixed-sex couples (15 with, 15 without a child) encountered an "injured" confederate in parks and parking lots of shopping centers. The main results suggested that it may be the task of fathers to model altruism for children in this situation. In the second study, an adult woman, accompanied or unaccompanied by a child, or a lone child, asked a total of 84 women in their suburban homes to sign a petition which was either "appropriate" or "inappropriate" for children. While an interaction between the age-of-requester and appropriateness-of-petition factors was predicted, only the overall difference between petitions was significant ($p < .01$). Implications of these results were discussed.

A. INTRODUCTION

Much of the research on altruistic behavior has been devoted to its developmental aspects. Aronfreed (1), and Midlarsky and Bryan (15), have studied the acquisition of altruistic dispositions in the process of socialization. Another group of laboratory experiments has been concerned with the effects of models on children's willingness to share with other children (4, 6, 7). Staub (18) has examined the likelihood that children will help a child in distress, as a function of the potential helpers' age. However, virtually no attention has been devoted to the possible effects of the presence of children on helping behavior of (North American) adults. An exception is an experiment by Ross (16), where children were used as passive confederates in an

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attempt to focus responsibility for intervention in an emergency on lone adult subjects. The presence of children increased adults' helping in comparison to a condition involving passive adult confederates.

The objective of the present studies was to provide information, in naturalistic settings, about the relevance of two complementary characteristics of children in determining the frequency and amount of adults' helping behavior and the likelihood that they will grant a request. First, in addition to focusing responsibility for acting in an emergency on adults, children are usually considered as "educational targets": they are supposed to be taught norms and values regarded as desirable by the society, and helping others in need is certainly one such value [*cf.* Leeds' (14) notions on altruism and the "norm of giving," and the Berkowitz-Daniels (2) norms of "social responsibility"]. An emergency provides adults with an ideal opportunity to teach children (who are present when the emergency occurs, but are not involved in it) an important social value by way of practical demonstration: i.e., by acting as altruistic models. This should be particularly true if the children are relatively young, the adults in question are their parents, and the nature of the helping act is such that there is no concomitant danger for the children. In short, one testable hypothesis which can be derived from this discussion is that adults should be more likely to intervene in certain emergencies when accompanied by their children than when not thus accompanied. It should be noted, however, that even if parents are genuinely interested in socializing their offspring, the predicted effect is likely to be obtained only if parents are aware of the experimentally demonstrated fact that at least boys up to 10 years of age are far more willing to emulate a model who acts altruistically, rather than merely preaches altruism (4, 7). Study 1 was designed to test the above hypothesis.

A complementary characteristic of children, potentially also relevant for adult helping, is that they are weak and dependent, or at least are considered such by adults. From the formulations of both Leeds (14) and Berkowitz and Daniels (2), it follows that adults should be more likely to grant a request made by a child, in comparison to that made by an adult. However, this relationship may not be as straightforward as it appears at first. A person deciding whether to grant a request may make attributions not just about the requester's ability to secure the outcome he desires without help from others, but also about the requester's motives, and the legitimacy and appropriateness of these motives. Moreover, these two kinds of attributions (*cf.* 8) may interact. Thus, it is possible that attributions of weakness and dependence made to children-requesters by adults increase the likelihood of the

latter's positive responding only if the request is deemed by adults as one "appropriate" for children to make. Study 2 was designed to test this hypothesis. It is of little importance here whether granting a request is an example of helping or of complying behavior. It has been argued by Konečni (9) that helping and compliance are often governed by similar variables. Moreover, an investigation of variables affecting the likelihood that a request will be granted seems important irrespective of how this behavior is labelled.

In view of the recent criticisms of normative treatments of altruistic behavior (e.g., 10, 12), it should be pointed out that norms are presently used as sources of specific experimental hypotheses, rather than invoked to explain results on a *post hoc* basis.

B. STUDY 1

This experiment was designed, as explained above, to test the hypothesis that adults may be more willing to help in an emergency if accompanied by their children. An additional variable was the sex of help-givers, which is of considerable interest, given the hypothesis being investigated. At this point in time in our culture, the fathers rather than the mothers may be expected to model altruism for the offspring. Such a sex-role prediction is an extension of the more general claim that men should be more likely to help in an emergency than women, which has not, however, received unanimous support in the literature (e.g., 5, 17).

Finally, a test of one aspect of the diffusion-of-responsibility notion (5, 12) was incorporated in the design. Latané and Darley (12, pp. 104-106) found that when two friends could not communicate with each other, they reported an "epileptic fit" as quickly as lone subjects did; however, when two friends were in the same room (13), they did not help a "fallen woman" as often as would be expected on the basis of lone subjects' rate of helping. It was considered desirable to replicate the latter result in a field setting, and to determine whether the decrease in the two-friends cell may be offset by the presence of a child presumably belonging to one of the friends.

The nature of the variables of interest dictated that the research be essentially correlational, involving naturally occurring categories of subjects. It had originally been planned to examine the reactions to an "injured" person of people belonging in 10 such categories: Woman Alone, Two Women, Woman + Man, Man Alone, and Two Men, in each case either accompanied or not accompanied by a child. However, the peculiar scarcity of men, except in the company of a woman, in parks and parking lots of shopping centers, necessitated that the four categories involving Man Alone and Two

Men be eliminated from the design. The remaining six categories, with the help of some separately collected data, nevertheless made possible the tests of the major hypotheses.

It was essential that the need for a helpful intervention on the part of the subjects be salient, without the helping act being too "costly" and involving any conceivable risk when children were present. In addition, the emergency had to be of the everyday-occurrence type. A variant of the "fallen person" situation (13) seemed to satisfy all of these requirements.

1. *Subjects*

Subjects were 119 women and 30 men who were encountered in parks and parking lots of shopping centers in San Diego and Thousand Oaks, California. Only adults who were judged to be between 25 and 45 years of age were counted as subjects. In addition, to be subjects, people encountered had to fit in one of the following six cells of a 3×2 factorial: Woman Alone, Two Women, and Woman + Man, in each case accompanied/not accompanied by a child of 3-10 years of age.

2. *Procedure*

Two pairs of confederates conducted the experiment at different locations and at different times of day. A pair of confederates walked in the same direction, separated by about 15 feet, until the first confederate encountered an adult or a pair of adults who fitted in one of the six classification categories. All encountered subjects who fitted in these categories were included, except in cases where there were other people within a 30-foot radius. The first confederate signalled to his partner the presence of the subject. The second confederate made a few more steps and then stumbled and fell to the ground, clutching his (her) ankle. The falls had been practiced by the confederates until they achieved uniformity and convincingness; they usually occurred about five feet away from the approaching subject(s), and almost directly in the subject's (or subjects') path. Prior to the fall, the second confederate watched the first confederate only, and thus was usually blind to the category of the subjects. Neither confederate established eye-contact with subjects, and no questions addressed to the fallen confederate were answered. After 15 seconds, during which the fallen confederate emitted sounds indicative of moderate pain, he (she) got up, at a signal from the first confederate. If any subjects still inquired about the extent of the confederate's injury, they were assured that no further assistance was

needed, and the confederate left the area. The first confederate had remained close enough to the fall area (inconspicuously positioned behind the subjects) to record the length of time spent by the subjects within a five-foot radius from the fallen confederate, up to the maximum of 15 seconds. In addition, he recorded whether or not help was given, defined as inquiries about the fallen confederate's well-being and offers of assistance. There were thus two main dependent measures. In the case of two-person groups, the second confederate noted which of the two people was principally responsible for the offers of help when these were made; finally, by paying attention to subjects' remarks, bodily movements, gestures, and changes in the direction of walking, this confederate determined whether a subject or subjects noticed the fallen confederate (all subjects clearly did). All confederates (three women and one man, in their early 20's and dressed in neat jeans and sweaters) alternated in the two roles and ran the subjects in the six categories an approximately equal number of times. Given the innocuous, everyday nature of the "incident," and the fact that subjects remained anonymous, it seemed unwise to delay and interrupt the subjects further by debriefing them.

After Study 1 had been completed, a separate investigation was carried out to check for the possibility that subjects in the two Woman + Man cells were drawn from populations different on relevant dimensions; for example, couples accompanied/not accompanied by children could differ on the married/unmarried or courting/not courting dimensions, which could influence the amount of attention they paid to their environment, or affect the likelihood that they would want to become involved with an "injured" stranger. Couples walking in the areas in which the original research had been carried out were approached by a woman in her midtwenties who said she was associated with the "School Board." Weather conditions, times of day, and days of the week were comparable to those of the original study. The "pollster" claimed to be tapping public opinion on a benign issue (construction of bicycle lanes for children). In the course of the conversation, information about a couple's marital status was casually obtained; when a couple was accompanied by a child, it was determined whether the child belonged to one or both adults. No couple refused to divulge information, nor displayed the slightest hesitation in providing it. All couples encountered who fitted in the two critical categories were approached (20 were with a child, and 22 without); none of the couples approached refused to enter the conversation.

3. Results and Discussion

The main results of the experiment are presented in Table 1. An analysis of variance was carried out on the time scores after they had been subjected to a logarithmic transformation. This analysis yielded only a statistically significant interaction ($F = 3.29$, $df = 2/85$, $p < .05$), to be discussed below. Individual comparisons between cells (by the Duncan test) are also presented in Table 1.

The results in terms of the proportion of subjects in different cells who offered assistance (see Table 1) closely paralleled the time data, even though they were only marginally significant. The proportion data were subjected to an arcsine transformation (19) and the interaction tested by means of an appropriately weighted contrast, using the theoretical error term.² The resulting F of 2.75 ($df = 1/\infty$) has an associated p of less than .10, and the residual is < 1 . Thus, it seems that people who stayed for a longer period of time in the presence of the fallen confederate also tended to be more helpful toward this person.

The pattern of the time data suggests that the predicted significant interaction was due to the fact that, when children were not present, a lone woman was more likely to help the "injured" confederate than two-person groups composed of two women, or especially of a woman and a man; however, the presence of a child significantly decreased the helping of lone women, and somewhat decreased that of pairs of women, while significantly increasing the helping responses of mixed-sex pairs. Both the time and helping data for subjects not accompanied by a child (top row of Table 1) gave support to the general diffusion-of-responsibility notion. This is particularly striking when it is taken into account that the probability of at least one individual helping is greater in two-person groups.³ However, given the reasonable assumption that two women walking together may be considered "friends," the nonsignificant difference between the Woman Alone and Two Women (without a child) cells clearly indicated a failure to replicate the Latané-Rodin (13) finding that friends who could communicate with each other helped less than would be expected by the results for lone subjects.

While the main effect of the absence/presence of a child failed to emerge, the interaction indicated that being accompanied by a child differentially affected various categories of subjects. Two points should be made about the bottom row of Table 1 (presence of a child), in comparison to the top row.

² See Langer and Abelson (11) for the rationale of this procedure.

³ Note that the presence of the interaction is *unaffected* by the fact that the probability of at least one individual helping is greater in two-person groups.

TABLE 1
MEAN TIME IN SECONDS SPENT NEAR FALLEN CONFEDERATE,
AND PERCENT OF SUBJECTS OFFERING ASSISTANCE

Presence of child	Woman alone		Two women		Woman + man	
	Time spent	% helping	Time spent	% helping	Time spent	% helping
No	13.0 ^a	86	12.1 ^{ab}	71	9.5 ^b	53
Yes	8.8 ^b	74	10.4 ^{ab}	64	13.3 ^a	80

Note: Cells with different superscripts (for the "time-spent" dependent measure) differ at the .05 level. Subjects *without* a child were 14 lone women, 14 pairs of women, and 15 mixed-sex couples. Subjects *with* a child were 19 lone women, 14 pairs of women, and 15 couples. Thus, a total of 119 women and 30 men were encountered.

First, the reversal, in terms of the time data, of the magnitude of Woman Alone *vs.* Two Women cells as a function of the absence/presence of a child, is perhaps worthy of note; the possibility, mentioned in the introduction, that the presence of a child may offset the decrease in the two-communicating-friends cell in comparison to the lone-subject cell (*cf.* 13) received some support. [In cases of helpful Two Women With Child subjects, and when it was possible to determine to which of the two women the child belonged (holding the child by the hand, etc.), the confederate's observations indicated that an (assumed) mother was as likely to help as the other woman.] The second and more important point is that the reversal was even stronger in the Woman + Man With Child cell: couples walking with a child spent more time with the confederate than any other category of subjects. At the anecdotal level, it should be mentioned that these people's offers of help, somewhat surpassed in the sheer frequency of occurrence only in the Woman Alone Without Child cell, were far more often of the "costly" kind (involving driving the confederate home, to a hospital, etc.) in comparison to offers made by all other categories of subjects. Confederates' observations indicated that in both of the Woman + Man cells the helping responses were initiated mainly by men.

On the whole, the following explanations suggest themselves: it is possible that women tend to avoid involving and ambiguous social interactions in the presence of their offspring of whom they are protective, and/or that it is predominantly the fathers, rather than mothers, who are expected in our culture to act as altruistic models for their children. Without the former explanation being completely discounted, the latter is favored by the fact that the situation and the helping act required were innocuous, and by the significant difference between the Woman + Man With *vs.* Without Child cells. The sheer presence of a man in a mixed two-person group was cer-

tainly not conducive to much helping, but the presence of a child drastically increased the helping responses of such groups. Mothers may be held less responsible for teaching altruism to children in this sort of situation both in absolute terms and especially when the father is present. Moreover, the difference between the two Woman + Man cells cannot apparently be explained away by differences on the married/unmarried or courting/not courting dimensions between the populations from which the couples accompanied/not accompanied by a child were drawn. In the mentioned, unobtrusively conducted, poll of 20 couples walking with a child, and 22 couples walking by themselves, it was found that 17 of the former, and 14 of the latter, were married-to-each-other couples ($\chi^2 = 1.49$, *ns.*, corrected for continuity). In addition, in the case of all 17 married couples walking with a child, the child belonged to the couple; in all three cases of unmarried people walking with a child, the latter belonged to one of the adults.

To conclude, the experiment provided correlational evidence for the notion that the presence of a child may affect adults' (parents') helping behavior. More specifically, this may be due to the child's serving as an educational, "socializable" target for its father, more than its mother, at least when helping a stranger in a public place is in question. While some of the data supported the diffusion-of-responsibility hypothesis, the considerable helping in the situation where couples (particularly fathers) had an opportunity to model altruism for their children leads to the conclusion that this may be yet another limiting condition to the generality of this hypothesis.

C. STUDY 2

Four experimental cells were required to test the possibility that attributions of weakness and dependence made to children-requesters (as opposed to adult requesters) by adult respondents would increase the likelihood of the latter's helping only if the request was deemed by adults as one "appropriate" for children to make. The request consisted of asking female adult subjects to sign one of two petitions: one dealt with an issue appropriate for children (construction of bicycle lanes leading to schools); the objective of the other petition was relatively inappropriate for children (lowering the legal drinking age in California to 18). The request was made either by a lone adult female, or by a 12-year-old male child. An interaction was predicted such that the child's request would be granted more often than an adult's in the case of the Bike petition, whereas the reverse was expected for the Drink petition.

Two additional cells were incorporated into the above design, involving an

adult requester, accompanied by a child, soliciting signatures for the two mentioned petitions, in order to test further predictions derived from the general framework of attribution theory. It was hypothesized that in the case of the Drink petition the request of an adult accompanied by a child would be granted even less often than that of a lone child. Presumably, the kind of ulterior motive likely to be attributed by subjects to an adult who involves a child in an issue inappropriate for the latter would be less excusable than that attributed to a child making an inappropriate request; in the latter case, the responsibility for the act could be seen as lying not with the child, but with an adult who, even though absent from the situation, may have coerced the child to make the request. On the assumption that the Drink petition would generally elicit less support than the Bike petition, the Adult + Child Drink cell was expected to be the lowest in the experiment. In contrast, it was predicted that an adult accompanied by a child would obtain a greater number of signatures in the Bike petition than a lone adult, though less than a lone child. In this case, the motives attributed by subjects to the adult accompanied by a child would presumably be "loftier" than for the Drink petition, such as a direct involvement with children, in addition to a general concern for children's welfare. The idea here is that children further enhance the acceptance of adults involved with "good" causes (given the standards of a particular population of respondents), while further decreasing the acceptance of those involved with "bad" causes.

Since a possible source of variation in the present experiment was whether the respondents themselves had children, this information was obtained by experimenters immediately after a subject made clear his decision to sign or not sign a petition.

1. Procedure

The study was carried out by two females in their twenties (clearly over 21) and one 12-year-old male child. Modestly dressed, they knocked on doors of single-family dwellings in a homogeneously middle-class area in San Diego County (Clairemont) on seven weekdays between 3:45 and 4:45 p.m. All houses within several randomly chosen blocks were eligible, with the exception of corner homes. The subjects were women who opened the door and heard the entire request. A total of 104 homes was actually approached, but data could not be collected in 20 either because there was no response, or a man responded, or the interaction was terminated by a potential subject before she heard anything about the objective of the given petition. There were six experimental cells in a 2×3 design (14 women per condition).

The first factor was the type of petition which subjects were asked to sign. When a subject opened the door, the experimenter said, "I am circulating a petition for . . .", and then either ". . . the construction of bicycle lanes," or ". . . the lowering of the drinking age." The experimenter then asked the subject to read the heading of the petition to which she was assigned. These headings read either "I would support a move to construct bicycle lanes on the main thoroughfares leading to and from Clairemont's Public Schools," or "I would support a move to lower the legal drinking age in California to eighteen." On the sheet given to the subject there were always four signatures below the heading, supposedly the endorsements of previously contacted people. The second factor was the "type" of experimenter who was at the door. This was either an adult experimenter alone, or accompanied by the child, or the child alone. In the Adult + Child conditions, the adult always made the request. Houses were randomly assigned to experimental conditions. The two adult experimenters ran an equal number of subjects in the conditions involving adults.

Immediately after a subject responded (positively or negatively), she was politely asked whether she had any children under 21 years of age. The experimenter then thanked the subject and departed.

2. Results and Discussion

The results of the experiment are presented in Table 2. An analysis of variance was carried out on the proportion scores submitted to an arcsine transformation, and using the theoretical error term (11). There was a large main effect of the type of petition ($F = 17.19$, $df = 1/\infty$, $p < .01$); as predicted, the middle-class women in a Southern California community were far more willing to support the construction of bicycle lanes for children than the lowering of the drinking age.

However, the main effect of the type-of-requester factor was not significant ($F = 1.05$, $df = 2/\infty$). More importantly, the predicted interaction, which was of major interest, yielded an F of .77 ($df = 2/\infty$, $p \approx .55$). This may have been due to the "basement" and "ceiling" effects for the Drink and Bike petitions, respectively. Unfortunately, the amount of collected pilot data was limited, and did not suggest that the difference in support for the two petitions would be so large. When a request is considered unreasonable and/or controversial by members of a given population, it is apparently not granted irrespective of who makes it. On the other hand, when a request is considered eminently reasonable, it is granted irrespective of who makes it. Furthermore, the validity of these statements was apparently not affected

TABLE 2
PERCENT OF SUBJECTS SIGNING A PETITION

Type of petition	Person making the request		
	Adult alone	Child alone	Adult + child
Drink	43	29	21
Bike	71	86	64

Note: $n = 14$ per cell.

by the degree to which the nature of a particular request directly concerned the person of whom the request was made. Of the 84 women, 61 had children and 23 did not; 33 of those with children, and nine of those without them had been assigned to the Drink petition; 10 of the 33 with children, and three of the nine without children, signed this petition, the proportion signing being almost identical in the two cases. Similarly, in the case of the Bike petition, the difference in the proportion signing was far from significant: 22 of the 28 women with children signed this petition, while nine out of 14 childless women also signed.

D. GENERAL DISCUSSION

By suggesting that children are a source of cues which may affect adults' helping behavior, the present experiments have begun to explore a neglected area of altruism research. In addition, the results may perhaps be profitably discussed in terms of the interplay in the determination of social behavior of situational cues, their interpretation (including attributions made to the source of cues), and the presumably trans-situational, "higher order" factors, such as social norms.

Study 1 showed how various categories of situational cues (emanating from the injured person, the child, etc.) may interact with normative prescriptions ("people in need should be helped"; "children should be taught altruism"). Both situational factors and norms improved the accuracy of prediction, especially when additional qualifiers consisting of both situational and normative components were taken into account ("fathers, rather than mothers, should model altruism for children when helping involves a stranger in a public place"). Norms are perhaps best regarded as statements summarizing the history of exposure to varied behavioral contingencies common to large groups of people in a culture. Thus, when the behavior in question is relatively gross (molar), normative prescriptions, coupled with a reasonably small number of situational qualifiers, may apparently serve as sources of relatively accurate predictions. However, it is clear that the more molecular the behavior of interest, and the greater the desired specificity of pre-

dictions, the greater the number of situational qualifiers needed. Cut-off points on this continuum, beyond which norms would be of negligible predictive value, are presumably dictated by both theoretical and practical considerations. The above proviso qualifies the validity of the Latané-Darley (12) criticism of social norms for their excessive generality. In short, norms may be useful to social scientists, but only up to a point.

Study 2 exposed another side of the issue. Both the existing experimental reports and intuition would suggest that helping behavior should have been affected by the (a) situational cues emanating from the requesters of different age, (b) norms concerned with helping the weak, and (c) attributions made to the requesters on the basis of cues, norms, and factors, such as whether the subjects themselves had children. Yet, this simply was not the case. A different normative prescription, subject perhaps to social-class and type-of-community considerations, accounted for most of the variance. While it is easy to join Latané and Darley (12) in their further criticism of norms for their "conflictingness," and for the fact that any number of them can be invoked to handle different experimental outcomes, it is clear that situational variables fared no better in this experiment.

Study 2 is thus an example of the fact that particular norm-based attitudes (e.g., toward the drinking age and bicycle lanes) may override a variety of situational variables, as well as other normative prescriptions. It is our impression that factors with such robust effects are unjustifiably ignored in the influential literature favoring exclusively situation-specific explanations [see Bowers (3) for a sound critique of situationism]. One of the reasons for this practice may be that such factors are not investigated a great deal, having been adjudged commonsensical and uninteresting, despite the fact that they account for a large proportion of the variance in many situations. Second, there may be a bias against reporting in sociopsychological journals findings indicating stability and consistency of behavior across situations, because of the type of experimental design predominantly used and the almost exclusive reliance on the Fisherian statistical decision procedures in the evaluation of results. Findings of the absence of treatment effects may often be indicative not of weak manipulations, but of the trans-situational stability of behavior.

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THE CATHARTIC VALUE OF SELF-EXPRESSION:
TESTING, CATHARSIS, DISSONANCE, AND
INTERFERENCE EXPLANATIONS* 1 2

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SUMMARY

The effects of anger arousal, type of expression, and communication destiny on anger and aggressive drive are examined. One hundred ten students were exposed to an insulting or a noninsulting communication. Subjects replied to the communication by supporting it, opposing it, or taking a neutral position. Some were told that their replies would be read by the person who had written the communication (target), and others that their responses would not be shown to the target. Results show that anger arousal produced more hostility than the nonarousal and that anger arousal interacted with type of expression. Angry subjects who had expressed their feelings became more hostile than subjects who had expressed the opposite of their feelings. Angry subjects who had taken a neutral position, however, were lowest in hostility. Experimental effects attributable to other variables were nonsignificant. The results are interpreted in terms of a cognitive interference hypothesis.

A. INTRODUCTION

A notion widely accepted by psychologists, psychiatrists, and lay people is that the expression of aggression, hostility, or rage reduces the consequent probability of the occurrence of aggressive behavior (5, 9, 10, 11, 12, 19, 28, 29). Such changes in aggressive behavior or affect are usually labeled "catharsis" or a "cathartic effect."

Many psychologists do not accept the existence of catharsis and, in fact,

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² Requests for reprints should be addressed to the author at the address shown at the end of this article.

feel that the expression of aggression, anger, or hostility leads to increases rather than decreases in aggression (2, 21, 26). One theoretical explanation of such views fits within the framework of the theory of cognitive dissonance (13). Expressing hostility toward someone would be dissonant with any cognitions that the target may be a good or reasonable person or with the aggressor's view of himself as a peaceful or friendly individual. In order to reduce the dissonance resulting from an attack and to justify the attack on him it may be necessary to denigrate the target of aggression. Evidence tends to show that disliked persons or groups are highly likely targets for aggressive behavior. Once denigrated, a person or group is more likely to be attacked than before. Aronson (2, p. 157) sums up the dissonance view suggesting that, "Violence does *not* reduce the tendency toward violence: violence breeds more violence."

Another possible interpretation of the catharsis and aggression literature is that conditions that force subjects to focus on anger enhance the maintenance of high anger levels. According to this viewpoint, symbolic expression may only serve to alert the subject about his own hostility level. The expression of anger by angry persons may result in maintenance of aggressive drive. However, conditions which produce cognitive interference with an annoying event would permit anger to dissipate.

Experimental studies have often served to confuse rather than clarify this difference in theoretical outlook because researchers have allowed considerable variability in methods of anger arousal, modes of aggressive expression, and choice of dependent measures.

For the purposes of this discussion, *aggression* refers to behavior which is designed to result in harm to some person or his property (14); *anger* connotes an *emotional state* with autonomic correlates which can serve to energize aggressive behavior. The terms *hostility* and *aggressive drive* are used interchangeably and refer to a *negative attitude* or feeling of ill will about people or events (6). In addition to these commonly used labels, the term *hostile behavior* is used to connote a composite of hostility and aggression; it refers to the behavioral component of hostile attitudes.

An experiment which considers anger (an emotional state), aggressive drive (an attitudinal state), and hostile behavior (a form of aggression) has been undertaken to clarify the role of self-expression in the reduction of anger and aggressive drive. Some of the variables manipulated in the experiment include (a) anger arousal; (b) type of expression; and (c) communication destination.

1. *Anger Arousal*

The anger arousal phase in catharsis experimentation is of major theoretical and methodological import. Several literature reviewers (e.g., 6) have suggested that the presence or absence of anger arousal may account for some of the discrepant results in catharsis research. Buss (6) contends that expressing aggression will produce a cathartic effect for angry subjects. If subjects are not angry, expression of aggression may teach them to behave aggressively on subsequent occasions, thus producing an increment due to learning.

2. *Type of Expression*

Different theories would make different recommendations about how hostility could be reduced in angry subjects. Catharsis theories predict that honest, direct expressions would be most effective. Dissonance theory holds that counterattitudinal role play would reduce the most anger. The interference viewpoint maintains that any type of expression which interferes with anger related cognitions will reduce hostility.

3. *Message Destination*

Berkowitz (4, 5) among others (3, 10, 18) maintains that the occurrence of a cathartic effect depends upon the degree to which the subject believes his hostile behaviors will affect the person toward whom they are directed. Thus, the destination of a message may be a crucial variable in catharsis research.

Data on communication destination may be relevant to Collins' revision of dissonance theory. Collins (7) and Hoyt, Henley, and Collins (20) have proposed that an individual will only experience dissonance when aversive consequences to himself or others result from his attitudinal or counterattitudinal expression. Thus they predict that the dissonance effect will occur when a self-expression is presumed to reach its destination and to have a noxious effect.

4. *Summary of Theoretical Predictions*

In the present experiment 55 subjects read an insulting communication and 55 subjects saw a noninsulting communication. All subjects replied to the communication, either supporting it, opposing it, or taking a neutral position. Some subjects were lead to believe their replies would be shown to the person who had written the communication (target), while other subjects were told their replies would not reach their target.

Several theories predict different outcomes for the experiment. For angry subjects, the catharsis and the learning viewpoints predict that direct attitudinal expression will be the most effective treatment for reducing aggressive drive. The dissonance position predicts that counterattitudinal expression will be the most effective means of reducing hostility and that direct expression will be the least effective treatment. The learning and dissonance positions both predict an increment in hostility for nonangry counterexpression subjects. The catharsis viewpoint does not make this prediction.

The interference position predicts that neutral activity will lead to more hostility reduction than counterattitudinal expression, since the latter would also draw some attention to the anger arousing incident. For nonangry subjects, counterattitudinal expression should serve to increase self-perceptions of hostility. Direct attitudinal expression and neutral activities could be expected to have little effect.

B. METHOD

1. *Subjects*

The subjects were 50 male and 60 female introductory psychology students who were enrolled at San Bernardino Valley College, a California community college with students from a variety of ethnic and social class backgrounds.

2. *Independent Variables*

The experiment was purported to be on communication. The experimenter, who was introduced as an assistant to a researcher interested in the scientific study of journalism, explained that the exercise involved reading and responding to letters to the editor. The experiment included several phases:

a. Anger Arousal. Anger was aroused in half of the subjects, and not aroused in the remaining half. This was achieved by allowing subjects to read a letter to the editor which they were told had recently been printed in a large newspaper. The letter concerned a proposition on the California ballot which would provide for funding of California Community Colleges, an issue known to be of interest to the students. For the Anger Arousal condition, the letter urged a vote against the proposition. In the argument, the letter writer made several degrading remarks about community college education. He claimed they were stupid, irresponsible, and not worthy of free education. The letter for Non-Anger Arousal condition favored the proposition, adapting arguments from the campaign literature to emphasize the need for additional support for community colleges and to focus on the need for expanded funding of these institutions.

b. *Expression Type Manipulation.* All subjects in the Direct and Counterexpression groups were asked to reply to the letter they had read in the manner specified by the instructions. There were three versions of instructions for the reply: Forty-four subjects were instructed to reply to the letter *supporting* the position taken by the letter writer. Angry subjects receiving this instruction were classified as the Counterexpression group. Nonangry subjects assigned to this task were classified as the Direct-expression group. Another 44 subjects received a similar instruction asking them to *oppose* the position taken by the letter writer and to attack the man and his ideas in the reply. These subjects represented the Angry Direct-expression group and the Not Angry Counterexpression group. In addition, there was an Angry and a Not Angry Neutral Expression group. The instruction to these 22 subjects asked them to write an essay about the value of letters to the editor without mentioning either the letter they had read or its author.

c. *Communication Destiny Manipulation.* A note on the page following the space for the reply was used to manipulate communication destiny. In the Direct and Counterexpression conditions, the note thanked subjects for writing the reply. The remainder of the note was in one of two forms. In the To-target Condition, it was explained that the reply which had been written would be shown to the letter writer when he visited the college. In the Not-to-target Condition it was emphasized that the reply would only be used for the purposes of the research and would *not* be shown to the letter writer when he made his campus visit. The note was not used for neutral expression groups, since it would have had no meaning for them.

3. *Dependent Measures*

a. *Manipulation Check.* Just after the anger arousal phase of the experiment, several scales were administered so that the effect of the manipulation could be evaluated. These items were on a single page of the experimental booklet which immediately followed the letter to the editor. The first two entries on this page were dummy items used to make the study appear authentic. The first asked if any of the letters concerning Proposition 1 had been read in the newspaper. The second item asked if the actual letter used for the study had been read previously. The next item was included to determine the subject's orientation with respect to the letter. It asked whether the subject agreed with the comments made by the letter writer. Another item probed voting intention for Proposition 1.

Following the questions was a series of four semantic differential scales. The poles of the scales, separated by a seven choice response space, were as

follows: active-passive, relaxed-tense, angry-pleased, and good-bad. The semantic differential scales were used to tap affective changes which may have resulted from exposure to the letter.

b. Attraction. As a measure of interpersonal attraction, subjects were asked to rate the target on a number of traits. The traits were chosen from Anderson's (1) list of traits which are attributed to highly likable and highly dislikable persons. A cover story explained that the letter writer had been approached and interviewed, and that he had responded to items from well known personality tests. The subject's task was to see how accurately he could fill in information on the basis of minimal exposure to the letter writer. These appraisals were to be compared to the personality test results. The judgments of each trait were made along 13 point scales where 0 indicated the trait described the writer well, 12 indicated the trait did not describe him well, and 6 was a neutral point. A similar story used in a recent study (27) appeared to be taken at face value.

c. Affective Measure. The Abasement (aba) and Aggression (agg) scales of the Gough Adjective Checklist (16) followed the attraction measures and were used to evaluate the affective or anger state. Instructions asked the subject to mark each adjective which described how he was feeling at that moment.

d. Behavioral Task. On the final page of the booklet, a note explained that all of the people who had written letters to the editor had been invited to participate in a panel discussion at the college during the week before the election. The guests were to be paid from a guest lecturer fund, but the exact amount had not been decided upon. The note then explained that since the subject was one of the few people at the college who had been exposed to the letter writer's opinions, it would be appropriate for him to suggest how much money the letter writer should receive for his visit. Thirty dollars was given as the usual fee, and the subject was led to believe that his suggestion would actually affect how much the person would receive. The subject was then asked to select one of 11 values which ranged from \$5 to \$55 at five dollar intervals. The amount selected was taken as an index of hostile behavior.

e. Cognitive Measure. Greenberg and Tannenbaum (17) demonstrated that angry subjects made more spelling and grammatical errors while encoding than nonangry subjects. They suggested the number of errors may be a valid index of cognitive stress. Each subject's reply was read, and errors were allied by two female graduate students who had backgrounds in language.

C. RESULTS

1. *Data Transformations*

Data for some of the dependent measures had to be transformed or re-organized. Ratings of traits used as attraction measures were factor analyzed (using varimax rotation of the principal components matrix). The factor analysis revealed that two factors accounted for a substantial proportion of the variance. These factors each represented clear conceptual dimensions and were dubbed Trustworthy and Annoyance. Subscales were calculated by summing together ratings for the four traits which loaded above a .50 criterion on each factor. Trustworthy scores were calculated by summing together ratings for the traits: competent, dependable, helpful, and sensible. Annoyance scores were obtained by summing together ratings on the traits: obnoxious, narrow-minded, irritating, and overcritical.

Spelling and grammatical errors were analyzed in terms of errors per hundred words.

2. *Manipulation Checks*

In preparing the fictitious letters to the editor, two assumptions were made. These were as follows: (a) subjects would disagree with the angering letter and agree with the nonangering letter; and (b) the angering letter would make subjects more angry than the nonangering letter.

To check on the former assumption, comparisons between subjects who had received the different letters were made for the question, "Do you agree with the comments made by the letter writer?" Four of the 55 subjects exposed to the angering letter claimed to agree with the author's views and only three of the 55 subjects who had read the nonangering letter indicated disagreement ($\chi^2 = 73.39$, $df = 2$, $p < .001$).

To determine whether the angering letter produced feelings of anger, responses to the "angry-pleased" semantic differential scale were analyzed. The seven point scale was scored so that low scores would indicate response toward the "angry" pole and high scores would reflect responses toward the "pleased" pole. The mean for subjects exposed to the angering communication ($\bar{x} = 2.87$) was considerably closer to the angry pole than the mean for subjects who were exposed to the nonangering communication ($\bar{x} = 5.61$). Statistical analysis showed this difference to be significant beyond the .0001 level [$t(108) = -10.66$]. Subjects exposed to the angering communication also reported feeling more tense [$t(108) = 2.20$; $p < .03$], active [$t(108) =$

-3.71; $p < .001$], and bad [$t(108) = 3.54$; $p < .01$] than those exposed to the nonangering communication.

3. *Pretreatment Comparisons*

Although the angering manipulation occurred early in the experiment, the other independent variables were introduced after the set of manipulation checks. Analysis of the four questionnaire items and the four semantic differentials showed no differences between subjects who were assigned to the various communication destiny or expression type conditions. Similarly, there were no differences by sex, and all interactions were nonsignificant. Therefore, it seems safe to postulate that there were no differences between subjects within each anger arousal group before the other manipulations were introduced.

4. *Preliminary Analysis*

The standard deviations and intercorrelations of all dependent variables are presented in Table 1.

The data were first analyzed without neutral groups included but with the addition of sex of subjects as a variable. This permitted a $2 \times 2 \times 2 \times 2$ (Anger \times Communication Destination \times Type of Expression \times Sex) multivariate analysis of variance (MANOVA). The results of this analysis revealed a highly significant effect for the Anger manipulation [$F(11,62) = 20.41$; $p < .0001$] and a significant interaction between Anger and Expression Type [$F(11,62) = 2.02$; $p < .05$]. All main effects and interactions associated with Communication Destiny manipulation and the Sex of subjects were nonsignificant.

In order to provide a clearer picture of the significant effects, data were collapsed across the two variables which failed to provide statistically reliable results. Since the Neutral Expression groups contained half as many subjects as the other experimental groups (experimental groups having been combined over Communication Destiny were double in size), the cell sizes were unequal and the design was nonorthogonal. In order to obtain unbiased F contrasts, the contrast sequence reordering technique (15) was employed. Each contrast of interest was obtained by subtraction from the between groups sum of squares and cross-products matrix (SSCP) after all other contrasts had been subtracted. As a result of this process, each multivariate F ratio is conservative and unbiased.

In the results of the 2×3 (Anger \times Expression Type) analysis the data showed a significant effect for Anger Arousal [$F(7/98) = 16.12$; $p < .0001$]

TABLE 1
STANDARD DEVIATIONS AND INTERCORRELATIONS OF DEPENDENT VARIABLES

Variables	1	2	3	4	5	6	7
1. Annoyance	7.80						
2. Trustworthy	4.52	1.00					
3. Behavioral task	2.68	-.54	.33	-.22	.24	-.15	.03
4. Gough aggression	11.95	1.00	-.48	.36	-.23	.14	-.07
5. Gough abasement	15.74		1.00	-.40	.29	-.27	-.05
6. Spelling errors	2.43			1.00	-.35	.29	-.01
7. Grammar errors	3.55				1.00	-.03	-.02
						1.00	.49

and significant interaction between Anger and Expression Type [$F(14/196) = 1.91$; $p < .03$].

5. Discriminant Function Analysis

Multivariate interactions are difficult to interpret. It seems that type of expression affected hostility level differently for angry than for nonangry subjects, but the loci of the interaction were not clear. To gain insight into the meanings of the multivariate interaction, a discriminant function analysis (8, 23) of groups arrayed in a 1×6 design was employed. The results of this analysis are shown in Table 2. There was a highly significant difference between group centroids [Rao's approximation of $F(35,415) = 3.49$; $p < .0001$]. Only the first root of $W^{-1}A$ (where W^{-1} = the inverse of the within groups SSCP matrix and A = the between groups SSCP matrix) was statistically significant by conventional standards [$\chi^2(35) = 11.32$; $p < .0001$].

The meaning of the discriminant function can best be understood by examining the loading of dependent variables upon the function. These loadings also appear in Table 2. Examination of Table 2 reveals that differences between groups can be largely accounted for by differences on the two attraction measures and the behavioral measure. This factor can be regarded as general hostility or aggressive drive.

6. Group Centroids

Centroids were computed by multiplying scores on each dependent variable by the corresponding raw discriminant function coefficient and summing the products across variables. The centroids for the groups of interest are displayed in Table 3. High scores indicate low hostility, and low scores indicate high hostility. As expected, angry subjects scored higher on hostility than nonangry subjects. The interaction between expression Type and Anger can be seen in Table 3. In relation to Direct Expression subjects, Counter-expression subjects were lower on hostility when angry, but higher on hostility when not angry. Multivariate simple effects tests revealed the differences among Expression Types to be highly significant among the angry subjects [$F(14,196) = 3.27$; $p < .0002$] but nonsignificant among nonangry subjects [$F(14,196) = 1.43$; $p < .10$]. Further analysis showed both the Angry Direct [$F(7.98) = 3.94$; $p < .001$] and the Angry Counter [$F(7.98) = 2.78$; $p < .01$] groups to differ from the angry Neutral group—the Neutral group showing the least hostility.

TABLE 2
MULTIVARIATE COMPARISON OF GROUPS ARRAYED IN A ONE-BY-SIX DESIGN

Variables	Univariate <i>F</i>	<i>p</i> <	<i>SDFC</i> ^a
Annoyance	17.82	.0001	.71
Trustworthy	12.23	.0001	-.35
Behavioral task	8.13	.0001	.42
Gough aggression	3.45	.01	-.03
Gough abasement	2.04	.07	-.05
Spelling errors	.84	NS	.07
Grammar errors	.92	NS	.01

Note: Multivariate *F* (35,415) = 3.49; *p* < .0001.

^a *SDFC* = Standardized Discriminant Function Coefficient.

D. DISCUSSION

The results of the experiment were consistent with the interference hypothesis. Among angry subjects, those who engaged in a neutral expression became less hostile than those who participated in either the Direct or Counterexpression groups. These data suggest that activities which reminded angry persons of a provocateur were less effective in reducing hostility than activities which diverted attention away from the instigator. Experiments performed under other circumstances with different subject populations have similarly shown that distraction may lead to significant reduction in aggressive drive. Mallick and McCandles (26), for example, observed that working problems in mathematics was more effective in reducing children's aggression than playing aggressively. The interference viewpoint may provide a viable explanation for the confusing results of studies on aggression mediated by televised violence. These experiments frequently show that T.V. violence has an aggression-activating effect when subjects are angered, but no effect when subjects are not angered (24). It is suggested that violent acts on television remind subjects of their own anger and keep their arousal from dissipating. Nonviolent shows may serve to distract the angry subjects and, therefore, may produce lower levels of arousal. Clearly, the interference notion provides a more parsimonious explanation of data from a variety of studies than does either the catharsis or dissonance viewpoint. Zillman and Johnson (30) have recently come to a similar conclusion on the basis of some experimental evidence. Thus, distraction rather than confrontation may be a worthwhile means of avoiding outbreaks of hostility.

Neither catharsis nor the dissonance theory would have predicted the results of the present study. Catharsis theory would have predicted that, among angry subjects, direct expression would have produced the greatest

TABLE 3
GROUP CENTROIDS ON LARGEST DISCRIMINANT FUNCTION
(Lower scores indicate greater hostility)

Expression form	Arousal	
	Angry	Not angry
Direct	.21 _a	3.10 _c
Counter	.58 _a	2.39 _c
Neutral	1.59 _b	2.77 _c

Note: Centroids with common subscript do not differ at the .01 level.

anger reduction. Our data show just the opposite. Dissonance theory could explain the outcome for the angry Direct expression subjects, but would have difficulty explaining why subjects taking a neutral position became less hostile than those taking a counterattitudinal stand. Only the interference position can account for all of the experimental data.

Contrary to some theoretical positions (3, 5, 10, 20) subjects who believed their essays were going to be shown to the target did not differ from those who believed that the essay would not reach the target (as reflected by scores on several measures). It should be noted, however, that the Communication Destiny manipulation was relatively weak and that a more noticeable manipulation may have been successful. The equivalence of the Angry and Not Angry groups for the number of spelling and grammatical errors fails to replicate the finding reported by Greenberg and Tannenbaum (17). Subjects in the present experiment, however, wrote fewer words than those in the Greenberg and Tannenbaum experiment, and the possibility still remains that the effect would have occurred had our subjects written more words.

Two limitations of the experiment should be mentioned. First, the anger arousal manipulation was quite weak. Therefore, the results may be specific to mild levels of anger. Second, the results may also be quite specific to the dependent measures which were employed. Both the author (22) and Kořecni (25) have pointed out that in catharsis and aggression research, different dependent measures will often show different effects in response to the same manipulation. If different measures had been used, the results might have been different.

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THE PORTRAYAL OF MEN AND WOMEN IN AMERICAN TELEVISION COMMERCIALS*

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SUMMARY

The characteristics of adult male and female models in randomly selected television commercials were systematically coded, and several significant sex differences were discovered. More men than women are presented in television commercials, the basis for the credibility of those men and women who are presented differs as do their roles, their location, their arguments on behalf of a product, and the rewards they reap for using a product. These sex differences, which tend to portray women in a relatively unfavorable manner, are discussed in the context of research which suggests that peoples' sex-role behaviors and attitudes may be influenced by televised models.

A. INTRODUCTION

Recent years have witnessed a growing concern that the relatively stereotyped sex-roles which prevail in our society have undesirable consequences both for the psychological health of the individual and for the egalitarian ideals of our society. Any attempt to emancipate men and women from these stereotyped sex-roles must first consider how they are normally acquired. Among the possible sources of influence on sex-role stereotypy are the mass media; for, according to social learning theory, "observational learning from live and symbolic models (i.e., films, television, and books) is the first step in the acquisition of sex-typed behavior" (9, p. 57). Empirical evidence is of course necessary to evaluate adequately the assertion that the media mold sex-typed behavior, and two kinds of data are needed. First, it must be systematically demonstrated that the behavior of male and female media models is sex-stereotyped; and, second, it must be demonstrated that people model their own behavior after that of like-sex media models.

Some evidence that the behavior of media-models is sex-stereotyped has been reported by Child, Potter, and Levine (2) who investigated the characteristics of male and female central characters in children's readers.

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Numerous sex differences in the behavior of these characters led the authors to conclude that "the treatment of female characters follows closely that of preparing girls in the stereotypes of the preceding century" (p. 17). A more recent investigation (11) has revealed that nearly three decades have not substantially altered the stereotyped portrayal of males and females in children's readers. While the evidence presented in these studies is quite convincing, it would seem desirable to have additional documentation of sex-stereotyped behavior on the part of media models if one is to consider seriously the possibility that the media mold sex-typed behavior. The present study sought to determine the extent to which a stereotyped portrayal of the sexes can be found in the medium of television.

Television seems a particularly important area to investigate inasmuch as it has the widest audience of any medium in this country, reaching 95% of the nation's homes (3). It is watched by all kinds of people regardless of race, creed, national origin, social class, sex, or age. What's more, it is watched with extraordinary frequency. According to Looney (6), the American child during his preschool years spends more time watching television than he will spend in the classroom during four years of college—64% of the average preschooler's waking time is spent watching television. In the course of his life, television will have consumed 10 years of his time.

Within the television medium, the present study focused on commercials. It would be worthwhile to investigate male and female models in regular programming as well, but commercials provided a much more manageable unit of analysis, and their frequency of occurrence certainly justifies separate treatment. Indeed, Embree (3) reports that approximately 20% of TV air time goes to television commercials, and by the age of 17 the average viewer has seen some 350,000 commercials (6). The question of concern in the present investigation is what are the characteristics of the male and female models in these 350,000 commercials which are "sold" along with the product? To answer this, randomly selected television commercials were viewed for the purpose of systematically identifying the characteristics of male and female models depicted in them.

B. METHOD

1. *Sample*

The sample of commercials coded was drawn from the weekday broadcasts of the three major television networks in the Spring of 1971. CBS was sampled on a Tuesday; NBC on a Wednesday; and ABC on a Thursday. Each net-

work was viewed for a total of six hours: 10:00 A.M.—12 noon (morning); 1:30 P.M.—3:30 P.M. (afternoon); and 8:00 P.M.—10:00 P.M. (evening).¹ Inasmuch as most commercials are lumped together in such rapid succession that it is impossible to code every one of them with thoroughness and accuracy, only every other commercial in each series of advertisements was coded. A total of 210 commercials were viewed during these hours, of which 199 could be coded according to the criteria outlined below.

2. Coding

All commercials in which there was an adult male or female central figure were coded. Those in which only children or fantasy characters appeared—e.g., animals, cartoon figures, Mr. Clean—were not included in the final sample. The following characteristics of each central figure were coded: sex, basis for credibility, role, location, arguments given on behalf of a product, rewards offered or reaped for using a product, punishments threatened or incurred for *not* using a product,² and type of product advertised.

a. *Central figures.* Adult males and females playing a major role in a commercial by virtue of either speaking or having prominent visual exposure were classified as central figures. No more than two adults could be coded as central figures for any one commercial. If there were more than two adults present, those appearing most central were chosen. When it was unclear which two figures were most central, the coder was instructed to pick one central figure of each sex. If there were only two adult figures altogether, both were always coded.

b. *Basis for the credibility of the central figure.* The basis for the credibility of a central figure was categorized as *product-user* when he was depicted primarily as a user of the product being advertised; the basis for his credibility was categorized as *authority* when he was depicted primarily as someone who “has all the facts” about the product being advertised.

c. *Role of the central figure.* The central figures were also categorized according to the everyday role in which they were cast. The roles coded were the following: spouse, parent, homemaker, worker, professional, real-life celebrity, interviewer or narrator, boyfriend/girlfriend, and other.

d. *Location of the central figure.* Central figures were categorized ac-

¹ A qualification imposed on these viewing times was that programs, such as TV specials, with only one sponsor would not be viewed. This occurred on Wednesday evening, and the viewing time was therefore changed to 8:00 p.m.—9:00 p.m. and 10:00 p.m.—11:00 p.m.

² Since the frequency of occurrence of punishments was too low to permit analyses of the data, no further mention of this category will be made.

according to the locale in which they were depicted. The locations coded were as follows: home, store, occupational setting, and other.

e. *Arguments given by the central figure.* Central figures were categorized according to the type of argument they gave on behalf of a product. Three types of substantiating arguments were coded: *scientific arguments* consisting of some sort of factual, concrete evidence in favor of using the given product; *nonscientific arguments* consisting of opinions and personal testimonials in favor of using the product; and *no argument* which was coded when the central figure offered no argument, but merely displayed a product or was being persuaded by another central figure to use it.

f. *Rewards offered or reaped by the central figure.* In coding these rewards a distinction was made between product users and authorities: for product-using central figures, the rewards coded were those *reaped* by them; for authoritative central figures, the rewards coded were those *offered* by them. Four main categories of reward were coded: (a) *social enhancement*, which included the subdivisions of opposite sex approval, family approval, friends' approval, social advancement, career advancement, and other; (b) *self-enhancement* which included the subdivisions of psychological improvement, attractiveness, cleanliness, health, and other; (c) *practical rewards* which included the subdivisions of saving time, saving labor, and saving money; (d) other.

g. *Type of product associated with the central figure.* Central figures were categorized according to the type of product with which they were associated. Four basic product-types were coded: (a) *Body products* which included appearance aids, body hygiene-cleanliness products, clothing, and health products; (b) *home products* which included exterior household goods, interior household goods, household cleaners, and laundry and dish detergents; (c) *foodstuffs*; and (d) *other* which included pet food and products, sporting and recreational items, automobiles and automotive products, insurance, and other.³

3. Reliability

An index of the reliability of the coding was provided by interrater agreement on the coding of a subsample of commercials which were viewed prior to the main study. Three raters, including the one who coded the commer-

³ A tabular presentation of the various categories into which central figures were coded is available upon request from the first author at the address shown at the end of this article.

cials in the study proper, coded commercials during a two-hour session after they had carefully studied a written description of the categories and coding criteria to be utilized. To check for sex bias, one of these raters was a male. The coders agreed perfectly in their selection of 26 central figures from the 16 commercials which they viewed. Eighteen of these central figures were males, and eight were females. There was disagreement on one additional figure—two of the raters coded a male and one coded a female. The average percentage of agreement among raters regarding the characteristics of the 26 central figures whom they all coded was 91% for product, 92% for credibility, 91% for argument, 84% for role, 66% for location, and 83% for social enhancement.

C. RESULTS

To assess differences in the presentation of male and female models, eight chi square analyses were performed on sex \times category-subdivision contingency tables which reflected the frequency of appearance of males and females within each subdivision of the eight major coded categories (central figures, credibility, roles, locations, arguments, rewards, punishments, and products). Additional analyses were performed on the frequency of appearance of males and females within each subdivision of those subcategories which were nested within the major category of rewards: type of self-enhancement, type of social enhancement, and type of practical rewards.

When statistical significance was demonstrated in a data matrix with more than one degree of freedom, the category subdivisions were collapsed into a 2×2 (sex \times category-subdivision) matrix in accordance with whatever subdivisions seemed to be contributing most of the overall effect. With the data thus reduced to a one degree of freedom matrix, the precise meaning of a significant effect could then be ascertained.

1. *Frequency of Male and Female Central Figures*

In the 199 commercials which were coded, a total of 299 central figures were tallied. Males comprised 57% of these central figures, and females comprised 43%, a difference which was statistically significant ($\chi^2 = 5.62$; $p < .02$).

2. *Basis for the Credibility of Male and Female Central Figures*

Not only were there significantly more male than female central figures, but the basis of credibility for male and female central figures differed. Sev-

enty percent of the males were portrayed as authorities, while only 30% were portrayed as product users. Only 14% of the female central figures were portrayed as authorities, while the remaining 86% were cast as product users. This difference in the credibility-base of male and female central figures was highly significant ($\chi^2 = 88.75$; $df = 1$; $p < .001$).

3. *Role of Male and Female Central Figures*

A significant 2×9 (sex \times role) chi square analysis indicated that male and female central figures were depicted in different roles ($\chi^2 = 111.74$; $df = 8$; $p < .001$), and the data were collapsed into a one degree of freedom matrix to determine exactly where this sex difference lay. Compared with the males, female central figures were more apt to be portrayed in a role which defined them in terms of their relationship to others—a spouse, parent, girlfriend, or housewife. Males, on the other hand, were more likely than females to be portrayed in a role which defined them independently of others—a worker, professional, celebrity, or narrator-interviewer ($\chi^2 = 60.74$; $df = 1$; $p < .001$). The magnitude of this effect may in part reflect the tendency for males to be portrayed as authorities and for females to be portrayed as product users: one very common “independent” role for men was that of the interviewer-narrator expounding *authoritatively* on the virtues of some product; and one very common “relational” role for women was that of the housewife *using* some product. Hence, to insure that the obtained sex difference in roles was not merely a restatement of differences in the credibility-base for male and female central figures, a sex \times role analysis was performed in which housewives and interviewer-narrators were excluded. The magnitude of the effect was diminished in this analysis, but the basic finding held up ($\chi^2 = 3.94$; $df = 1$; $p < .05$): women still tended to be defined primarily in terms of their relationship to others (spouse, parent, or girlfriend), while men tended to be defined independently of other people (worker, professional, or celebrity).

4. *The Location of Male and Female Central Figures*

A significant 2×4 (sex \times location) chi square analysis indicated that male and female central figures were depicted in different locations ($\chi^2 = 14.54$; $df = 3$; $p < .01$). One degree of freedom contrasts revealed that female central figures were depicted in the home proportionately more often than were male central figures ($\chi^2 = 8.24$; $df = 1$; $p < .01$), while male central figures were depicted in an occupational setting proportionately more

often than the females were ($\chi^2 = 8.65$; $df = 1$; $p < .01$). One might attribute this finding to the fact that females were more often than males cast as product users—and where else does one use most products but in the home? But this explanation is inadequate inasmuch as the tendency for females to be depicted more frequently in the home and for males to be depicted more frequently in an occupational setting held true even when only male and female product users were considered (χ^2 s = 3.00 and 13.14, respectively; $df = 1$; $p < .10$ and $p < .001$, respectively). Hence there was nothing inherent in the role of product user which confined one to the home. Rather it was the sex of the central figure which accounted for differences in location.

5. *Arguments Given by Male and Female Central Figures*

A significant 2×3 (sex \times argument) chi square analysis indicated that male and female central figures gave different arguments in support of a product ($\chi^2 = 9.21$; $df = 2$; $p < .01$). A one degree of freedom analysis revealed that male central figures were significantly more likely than females to give any type of argument—scientific or otherwise. In fact 30% of the female central figures gave no argument at all as compared with only 6% of the male central figures ($\chi^2 = 27.69$; $df = 1$; $p < .001$).

6. *Rewards Offered by Authority Central Figures*

Male and female authorities did not differ in the rewards which they offered to the viewer for using the product they were advertising ($\chi^2 = 5.36$; $df = 4$; $p > .30$).

7. *Rewards Reaped by Product User Central Figures*

There were no significant sex differences in the general categories of reward accruing to males and females—i.e., males and females were equally likely to receive social enhancement, self-enhancement, practical, and other rewards ($p > .25$). However, there were sex differences in the type of reward received *within* the subcategory of social-enhancement ($\chi^2 = 21.21$; $df = 5$; $p < .001$). A breakdown of these data into a one degree of freedom matrix revealed that females were more likely than males to obtain the approval of family and the opposite sex as reward for using a given product, while males more frequently obtained the approval of their friends, social advancement, and career advancement ($\chi^2 = 12.81$; $df = 1$; $p < .001$). There were no

significant differences in the type of self-enhancement or practical rewards received by males and females who used a given product.⁴

8. *Product Types Associated with Male and Female Central Figures*

A 2×4 (sex \times product type) chi square analysis indicated that male and female product users were associated with different types of products ($\chi^2 = 8.97$; $df = 3$; $p < .05$). A breakdown of the data into a one degree of freedom matrix revealed that female product users were more likely than males to be identified with home products ($\chi^2 = 6.12$; $df = 1$; $p < .02$). One-third of the female product users were portrayed using home products as compared with about one-eighth (13%) of the male product users.

In addition to these sex differences in the likelihood of being associated with a given product, one other finding stands out in the data on product types. Because males were portrayed much more often as authorities than as product users, while the reverse was true for females, there was a general and consistent tendency for males to appear as authorities on a product which was used primarily by females. For example, while males comprised only 16% of the home product users, they accounted for 86% of the authorities on these products ($\chi^2 = 34.41$; $df = 1$; $p < .001$). Similarly, males accounted for 78% of the authorities on body products, but only 33% of the body product users ($\chi^2 = 20.99$; $df = 1$; $p < .001$). And, they comprised a full 95% of the authorities on food products, but only 40% of the food product users ($\chi^2 = 25.45$; $df = 1$; $p < .001$).

9. *The Time of Day*

In the analyses of sex differences in male and female central figures as a function of time, data from commercials viewed in the morning and afternoon were grouped together and compared with data from the commercials viewed in the evening. The reason for this comparison is that it is in the evening that males are most likely to be watching television, while in the morning and afternoon, most viewers are female.

The analyses revealed that differences in the presentation of male and female central figures were quite constant across time. That is, whatever differences there were were as likely to occur in the morning and afternoon

⁴ One sex difference was found *within* the subcategory of self-enhancement. Although the overall 2×4 (sex \times type of self-enhancement) analysis did not reach an acceptable level of significance ($\chi^2 = 4.33$; $df = 3$; $p < .20$), the data were broken down into a 2×2 matrix for further analysis inasmuch as it looked as though there was a striking sex difference in the likelihood of gaining "attractiveness" as a type of self-enhancement. The analysis bore this out: females were significantly more likely than males to be rewarded with attractiveness for using a given product ($\chi^2 = 4.00$; $df = 1$; $p < .05$).

as in the evening. Only one significant effect as a function of time emerged. The tendency for the central figures to be predominantly male was greatest in the evening: 70% of the central figures in evening hours were male as compared with 52% in the morning and afternoon ($z = 2.70$; $p < .007$).

D. DISCUSSION

The results of this study clearly indicate that the men and women presented to the viewing audience in television commercials differ in several noteworthy respects. The first of these is their frequency of appearance. Given that females constitute 51% of our population, one might expect that approximately one-half of the central figures in the media would be women. Since television commercials are especially geared to a consumer audience, one might expect an even greater proportion of the central figures to be women inasmuch as they are reputed to make 75% of consumer purchases in this country. But, women did not even comprise one-half of the central figures tallied in the present study—only 43% were women. Although male central figures held only a slight edge (52%) in the morning and afternoon hours when there are relatively few male viewers, their majority became a landslide (70%) in the evening hours when one might expect close to half of the viewers to be male.

Men not only outnumbered women in these commercials, but they also behaved very differently from them. Some of the observed sex differences in behavior bear a striking similarity to sex differences reported by Child, Potter, and Levine (2) in their study of children's readers. For example, just as female characters in children's books were less likely than the males to be knowledgeable, so were the female figures in television commercials less likely than the males to possess expertise. Whereas the male model was typically an authority or expert on the product being advertised, the female model was almost always a product user or consumer. Of course females, as product users, can have a kind of expertise. One can conceive of a female product user giving an argument in favor of using her brand, thus indicating some degree of knowledge even though she is not an authority. However, this was not the case; women were significantly less likely than men to present an argument in favor of using a given product. Hence, both in their credentials and in their behavior, the women in these advertisements were portrayed as less knowledgeable than the men.

Another similarity between the Child findings and the results of the present study concerns the rewards offered to males and females for using an advertised product. Consistent with the observation that male characters in

children's readers were more likely than the females to achieve success via personal advancement, male product users in these television commercials were more likely than the females to be rewarded with social and career advancement. Female product users, on the other hand, were more likely than males to be rewarded with the approval of family and husband or boyfriend, which is analogous to the finding that females in children's readers were more likely than the males to achieve success via nurturant relationships.

Other differences between men and women which were observed in the present study further reinforce current sex-role stereotypes. Less than half of the female models had their own, independent identity: 51 percent were defined in terms of their relationship to others—i.e., as a spouse, parent, or girlfriend—whereas only 36% of the male models were defined in this way.⁵ The fact that relatively few women were portrayed in an independent role is further reflected by the finding that proportionately fewer women than men were depicted in an occupational setting. In fact, only 11% of the central figures depicted in such a setting were women. This figure is substantially lower than women's actual representation in occupational settings inasmuch as they comprise 37% of the labor force in this country (12).

One of the conditions necessary for the television medium to influence sex-typed behavior seems to be fulfilled—the presentation of male and female television models is indeed sex-stereotyped. The question remains as to whether or not people model their own behavior after that of like-sex television models. There is evidence that when other factors are held constant, people are more likely to learn the behavior of a same-sex model than an opposite-sex model (5, 7, 8). And, there is considerable evidence that at least under certain conditions people do imitate the behavior of television models (10). There is not much evidence directly related to the question of whether or not people imitate the *sex-role* behavior of television models, but a survey by Gerson (4) revealed that individuals at least believe that they manifest this kind of imitation. While Gerson's findings are suggestive, *direct* evidence assessing the impact of media models on sex-role behavior is needed, and research on this question is currently underway.

In addition to research evidence bearing on the possible effects of televised models on people's sex-role *behaviors*, there is some research which has interesting implications regarding the effects of these models on people's sex-role *attitudes*. Zajonc's (13) research on the effects of "mere exposure" has dem-

⁵ In order to distinguish this finding from sex differences in the *credibility-base* of male and female central figures, the data on which these percentages are based excludes housewives and interviewers-narrators. See Results section for a further discussion.

onstrated that people react positively to things which are familiar to them. Thus television can affect our attitudes toward certain attributes and behaviors exhibited by men and women simply by virtue of exposing us to some of them more often than others.

Although defenders of advertising might protest that advertisements do not create sex-role attitudes, that they merely respond to existing ones, this is not true. Bem and Bem (1) nicely demonstrated that ads can indeed influence preferences. Over half of the women in their study preferred "female-interest" jobs when want ads were listed by sex. The identical jobs were preferred by only 19% of the women when they were not listed by sex. The same potential for influencing preferences exists for television advertisements.

While television commercials do not present particularly inspiring models for anyone, to say "this ad insults women" as feminists have of late seems particularly apt in view of the present evidence. The stereotyped portrayal of the sexes in and of itself provides good reason to be concerned about the characteristics of men and women depicted in television advertisements. The possibility that these characteristics will influence the sex-role attitudes and behavior of viewers provides even more cause for concern.

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HELPING BEHAVIOR AS A FUNCTION OF PICTORIALLY INDUCED MOODS*

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SUMMARY

Two experiments investigated the effect of pictorially induced moods on helping behavior. After a mood-arousing experience (positive, negative, control), Ss were provided with an opportunity to help a graduate student by volunteering to participate in an experiment. Results indicated that while positive mood did not influence helping, negative mood tended to facilitate such behavior. On the basis of subjective report data, the latter increase was interpreted in terms of expiation of guilt.

A. INTRODUCTION

A fair amount of research has been directed toward assessing the effect of mood on helping behavior. In general, data derived from this work are rather ambiguous. Most results either have been subject to alternative interpretations (2, 8) or have been found to be not replicable (3, 7). However, one recent study (1) does provide strong support for the notion that an individual's mood influences the probability that he will exhibit a helping response. Using a design which eliminated a variety of alternative explanations, Aderman (1) found that elated relative to depressed Ss were more likely to volunteer to participate in an unpleasant experience.

In an initial study the present authors attempted to expand the inquiry initiated by Aderman. It was noted that differences in helping by elated and depressed individuals may be due to (a) a facilitation effect exerted by positive mood, (b) an inhibition effect exerted by negative mood, or (c) some joint influences of both positive and negative mood. To distinguish between these alternatives, the helping behavior of Ss in pictorially induced positive and negative mood states was contrasted with that of Ss assumed to be in a neutral mood state. Positive mood Ss viewed eight slides showing flowers, animals, and sunsets, while negative mood Ss viewed eight slides showing old people and migrant workers. Following presentation of each slide, Ss

* Received in the Editorial Office, Provincetown, Massachusetts, on June 7, 1974. Copyright, 1975, by The Journal Press.

rated their mood on three semantic differential scales. Control Ss viewed no mood-arousing slides. Instead, they were asked to write two arguments in favor and two arguments against (a) Nixon giving up subpoenaed tape recordings, (b) Agnew being given a stronger sentence, and (c) draft-dodgers being granted amnesty. To assess willingness to help another individual, *E* provided Ss with an opportunity to volunteer to participate in experimental sessions conducted by a graduate student. Each *S* could volunteer to participate in from zero to nine sessions.

While the mood manipulation was found to be effective, data revealed no indication that negative mood suppressed helping. To the contrary, Ss in the negative mood condition volunteered to participate in more sessions than did Ss in the control condition. Data also revealed no indication that positive mood facilitated helping. No reliable difference in helping was found between Ss in the positive mood condition and Ss in the control condition. Although increased helping as a function of viewing negative mood slides was totally unexpected, a close examination of the negative mood slides suggests that it may be explained in a fairly straightforward way. All negative mood slides depicted poverty-stricken people who were obviously in rather desperate straits. It is conceivable that these slides, in addition to inducing feelings of depression and unhappiness, also induced feelings of guilt. Thus, the obtained inverse relationship between mood and helping may have been a function of differential guilt, with Ss in the negative mood condition attempting to expiate their heightened guilt by behaving altruistically (6). The finding that positive mood did not facilitate helping behavior is more difficult to interpret. It may indicate either that positive mood did not influence helping or that the positive mood manipulation was ineffective.

Since data from the foregoing study obviously were inconclusive, the present experiment was conducted using an improved design. In this study the procedure was changed to include an assessment of guilt and to allow Ss under all conditions to rate their mood. Changes in the number of mood ratings and the task of control Ss also were made in the interest of obtaining unambiguous data.

B. SELECTION OF STIMULI

Mood slides were identical with those used in the pilot study. These slides initially were selected with the use of the following procedure. Fifteen female introductory psychology students rated 24 black and white slides which had been selected by *E* as potentially mood-arousing. Following a 30-second presentation of each slide, students were given 15 seconds to characterize

their mood, using four semantic differential scales: happy-sad, good-bad, elated-depressed, and aroused-nonaroused. Each scale was presented on a six-point continuum. From the original 24 slides, eight slides having the most positive ratings and eight slides having the most negative ratings were selected for use in both the pilot study and the experiment. Positive slides depicted flowers, animals, and sunsets, while negative slides depicted old people and migrant workers. Subsequent statistical analyses (*t* tests) showed that *Ss* rated the selected positive slides significantly more favorably than the selected negative slides on all mood dimensions.

C. METHOD

The *Ss* were 33 female introductory psychology students who volunteered to participate for extra course credit. All *Ss* were American students. There were 11 *Ss* in each of the three experimental conditions. None of the *Ss* had previously participated in the pilot study.

The experiment was conducted in three separate group settings. One experimental condition was run in each setting. Following a brief introduction to the experiment, *Ss* under conditions of positive and negative mood were provided with an opportunity to view the appropriate set of eight slides. Slides were presented one at a time for a period of 30 seconds, successive slides being separated by a 15-second interval during which a blank slide was displayed. Control *Ss* viewed eight slides showing available choices in an experimental game through 2×2 matrix of point outcomes for two hypothetical individuals with two-choice options. After presentation of the slides, *Ss* were asked to characterize their mood using four semantic differential scales: happy-sad, good-bad, elated-depressed, and guilty-not guilty. Each scale was presented on a six-point continuum. The foregoing mood assessment was carried out primarily to provide an independent check on the mood manipulation.

Following mood rating, willingness to help another individual was assessed. The *E* indicated that he had been asked to help recruit people to participate in a research project being conducted by a graduate student. He explained that volunteers were needed to video tape and judge a series of 20-minute discussions on topics involving drugs, sex, and politics. So that volunteering would be influenced primarily by the motive to be helpful, he carefully pointed out that no experimental credit or monetary payment would be given for participating. As *E* made the foregoing recruitment speech, he passed out sign-up sheets. Each sheet contained a brief summary of the study to be conducted and a place where subjects could indicate their willingness to

participate in from zero to nine experimental sessions. The time presumably required for each session was 20 minutes.

D. RESULTS AND DISCUSSION

Data from each of the four mood scales were subjected to a one-way analysis of variance. Results of analyses on all four scales revealed a significant effect for mood conditions: happy-sad ($F = 62.65$, $df = 2, 30$, $p < .001$), good-bad ($F = 22.28$, $df = 2, 30$, $p < .001$), elated-depressed ($F = 28.57$, $df = 2, 30$, $p < .001$), and guilty-not guilty ($F = 12.97$, $df = 2, 30$, $p < .001$). Relative to Ss under control conditions, Ss under positive mood conditions rated themselves as higher on the happy, good, and elated scales and lower on the guilty scale. The Ss under negative mood conditions exhibited an opposite pattern of responding.

An analysis of variance on number of sessions for which Ss volunteered revealed a marginally significant effect for mood conditions ($F = 3.18$, $df = 2, 30$, $p < .054$). The Ss in the negative mood condition volunteered to participate in more sessions ($M = 2.18$) than did the Ss in either the positive mood condition ($M = .36$), or the control condition ($M = .46$). Volunteering in the latter two groups did not reliably differ. The foregoing pattern of responding is identical to that obtained in the pilot study.

The present findings are consistent with the view that guilt played a role in facilitating helping under negative mood conditions. Negative mood Ss were found both to feel more guilty and to be more helpful than control Ss. This finding accords well with other data (6) indicating that people may behave altruistically in an attempt to expiate their guilt. Moreover, it provides some indication that a relationship between guilt and helping may be obtained without any overt act on the part of S. In previous research guilt has been induced by having an individual harm or transgress against an innocent other. The present data clearly suggest that mere observation of people who appear to have been harmed or transgressed against may have a similar effect.

There is no evidence in the present data that positive moods facilitated helping behavior. Significant differences in mood between positive mood and control Ss were not accompanied by corresponding differences in helping. Although in disagreement with early work (4, 5), this finding accords well with an increasing body of data (3, 7) which has failed to find increased helping by Ss in positive mood states. It should be noted, however, that both the present study and previous research dealt with American students as

subjects. Future research might explore the generality of these findings to other populations.

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PERSONALITY, ATTRACTION, AND SOCIAL AMBIGUITY*

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SUMMARY

Social Desirability (5) and Anxiety (10) were examined as mediators of similarity-attraction effects. Subjects were placed in an ambiguous face-to-face situation in which an accomplice agreed with the subject on seven of 14 attitude issues. It was hypothesized that in making interpersonal judgments (a) high anxiety subjects would attend to disagreeing information, and (b) high social desirability subjects would tend to agreeing information. Results supported both hypotheses.

A. INTRODUCTION

That interpersonal attraction is strongly determined by perceived similarity is a well substantiated finding (3). Despite the vibrancy of the similarity-attraction effect, however, substantial amounts of the attraction measure variance in the typical attraction paradigm are unaccounted for by proportion of similarity. This fact suggests that between-group comparisons, while of obvious interest, may mask individual differences in the effect of similarity on attraction.

Steiner (10) demonstrated that subjects may emit a variety of responses to interpersonal disagreement. There is also evidence (7) that individuals are characterized by consistent responses to face-to-face disagreement. However, in describing research efforts aimed at discerning personality mediators of interpersonal attraction, Byrne (3) points out quite convincingly the overall abysmal state of research in this area.

The current study was an examination of the effect of personality variables on the relationship between attitude disagreement and attraction. Attraction was measured in a neutral situation, designed to maximize any existing affective predispositions toward attitude agreement-disagreements. The personality variables of interest were Spielberger's (9) state-trait anxiety measures and the Marlowe-Crowne (5) scale of social desirability (SD). The theories underlying the social desirability and anxiety measures (5, 9) have clear

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empirical implications for subject responses to interpersonal disagreements, and both scales have been heavily researched in relation to social behavior.

To provide an optimal opportunity for the expression of personality attributes in determining interpersonal attraction, situational ambiguity as regards agreement-disagreement is a necessity. Extreme proportions of agreements and disagreements typically have an overwhelmingly strong effect that obliterates most individual differences in attraction scores (3). Clear evidence that a stranger agrees with them on a sizable majority of issues is apparently sufficient to elicit liking for the stranger among most subjects. In situations where there was no preponderance of agreement or disagreement, however, personality attributes and their concomitant selective perceptions might play a greater role in interpersonal attraction.

Both anxiety and social desirability are related to selective perceptions in interpersonal situations. Spielberger (9) describes anxiety as a predisposition to perceive a wide range of nondangerous circumstances as threatening. In an essentially neutral interpersonal relationship, subjects with high anxiety may perceive another person as threatening. High anxiety subjects should be extremely sensitive to any negative interpersonal stimuli and relatively insensitive to positive cues which do occur.

In contrast to anxiety, high need for approval (i.e., social desirability) is a predisposition to deny socially threatening stimuli (5). Conn and Crowne (4) reported that approval-dependent persons used avoidant, repressive defenses against hostility and blocked threatening material from their awareness. In a neutral setting high SD subjects may perceive others positively and as nonthreatening. In general, high SD subjects should be extremely sensitive to positive social stimuli and somewhat oblivious to negative social cues.

In the context of attraction toward neutral strangers, anxiety and social desirability were expected to have quite different, in fact, complementary effects. Specifically, two hypotheses were advanced: (a) high anxiety would be related to disliking others and enhanced recall for disagreements, and (b) high social desirability would be associated with liking others and heightened recall for agreements, when the proportion of attitude agreements-disagreements was constant.

B. METHOD

1. Subjects

Forty female undergraduates who were enrolled in a large introductory psychology course served as subjects. The subjects volunteered to participate in an experiment on impression formation and, in particular, an investigation

of the kind and amount of information people need to form accurate judgments of others.

2. *Materials*

a. Need for approval. Need for approval was measured by the Marlowe-Crowne (M-C) Social-Desirability Scale (5). The M-C scale consists of 33 true-false items designed to measure social desirability without psychopathological content. The M-C scale consists of items, such as "I have never intensely disliked anyone." Overall, items are of two types: culturally acceptable but probably untrue statements, and true but undesirable statements. The number of "true" responses to the first type plus the number of "false" responses to the latter type of item constitute the subject's score.

b. Anxiety. Both state and trait anxiety (9) scores were obtained from subjects. The state-trait anxiety scales are quite similar in content, the principal difference is the temporal focus of the instructions. The state scale asks the subject to respond as he feels "right now," while the trait scale instructions call for estimates of "on the average." Items include statements, such as "I feel upset," "I feel I am about to go to pieces," and a variety of other self-descriptive comments pertaining to feelings of anxiety. Both scales contain 20 total items, which are presented in a four-point, forced-choice format calling for responses ranging from "not at all" to "very much so."

c. Attraction. One of the primary dependent variables was the subject's score on the Interpersonal Judgment Scale (2). The IJS is a six-item scale calling for judgments of intelligence, morality, etc. Two items pertain to interpersonal attraction. Subjects are asked how well they would like the stimulus person, and whether they would enjoy working with her as a partner in an experiment. Judgments are made on a seven-point scale ranging from very negative to very positive evaluations.

3. *Procedure*

Subjects came to the laboratory individually. They were instructed that the experiment had to do with impression formation and the investigators were interested in the accuracy of their interpersonal judgments. Subjects were further instructed that in making this determination it was necessary to learn a bit about their own characteristics, so they would be asked to complete a couple of questionnaires before meeting the other person. In this initial phase of data collection, subjects completed the social desirability and anxiety measures, then completed a 14-item attitude booklet. The 14 attitudes were selected from the 42-item pool compiled by Gormly *et al.* (6). Items

were presented in a six-alternative, force-choice format and covered a variety of issues. Topics ranged from attitudes toward gardening to the meaningfulness of existence without the goal of eternal life.

After the experimenter collected the personality and attitudinal measures, a female accomplice was brought into the room. The experimenter explained that he wished to ask one person (accomplice) her attitudes on the 14 issues while the other person (subject) paid very close attention to the accomplice's responses so as to make accurate judgments about her later. With the subject's responses before him, the experimenter signaled the accomplice the appropriate verbal response on each item. The accomplice expressed attitudes that disagreed with the subjects on seven of the 14 items. Thus, for all subjects the proportion of agreements was a constant .50. Agreements were one position removed from the subject's original record but on the same side of, pro or con, the issue. Disagreements were three positions removed from the subject's original responses on the six-point scale. The topics of agreement were randomly distributed.

After responding to the 14 items, the accomplice left, and the subject filled out the Interpersonal Judgment Scale (2), estimated the number of issues on which she and the accomplice agreed and disagreed, and attempted to name the specific topics on which agreement and disagreement occurred. Estimating the number of agreement-disagreement requires a global evaluation of the accomplice's remarks, while recalling the specific topics on which agreement and disagreement occurred may indicate a clearer focus on the issues involved. The item topics included such issues as whether professors are concerned about students' needs, birth control, and the meaningfulness of life without the goal of eternal life.

C. RESULTS

The results supported both hypotheses. Neutral interactions elicited very different affective reactions from high anxiety and high need for approval subjects despite the fact that proportion of attitude agreements was constant. Table 1 contains the Pearson product-moment correlations between the personality scores and the attraction and recall criterion measures.

The correlations in Table 1 indicate that trait anxiety was positively correlated with recalling the number of disagreements. In addition, high anxiety subjects recalled more of the specific items (i.e., birth control, etc.) on which disagreements occurred. This sensitivity toward disagreements was apparently expressed in low attraction toward the neutral stranger. The correlations were significant for the more stable attribute of trait anxiety, but not for the situation specific state anxiety.

The pattern of results involving social desirability supported the second

TABLE 1
PERSONALITY CORRELATES (r s) OF ATTRACTION AND RECALL

Dependent measures	Social desirability	State anxiety	Trait anxiety
Attraction	.42**	-.34**	-.26
No. recalled as agreements	.33**	-.26	-.39**
No. recalled as disagreements	-.41**	.09	.35**
Topics of agreement recalled	.06	-.29*	-.40**
Topics of disagreement recalled	-.31*	.14	.39**

* $p < .10$, 38 df , two-tailed test.

** $p < .05$, 38 df , two-tailed test.

hypothesis. High social desirability scores were associated with attraction toward the accomplice and the number of issues recalled as agreements (Table 1). High SDs were not more likely to recall specific items on which agreement occurred, but there was a nearly significant negative correlation ($r = -.31$) between social desirability and recall of topics on which the neutral stranger had disagreed with them.

It is also noteworthy that social desirability scores were negatively correlated with anxiety scores for both the trait ($r = -.61$, $p < .05$) and state ($r = -.53$, $p < .05$) scales. These correlations are in accord with conceiving of anxiety and need for approval as complementary factors in their influence on interpersonal attraction.

D. DISCUSSION

The influence of personality on liking others is a matter of everyday observation. It is clear that some individuals are more disposed toward liking strangers than others, but research in the area has been disappointing by its lack of consistency. In the current study, holding the proportion of agreements constant at an intermediate level permitted the expression of individual differences in attraction. Anxiety and social desirability apparently influence interpersonal attraction by promoting selective perception. These two dimensions operate as psychological sets for different types of interpersonal relationships.

Distortions of the degree of agreement-disagreement evident in the recall data may only be possible in ambiguous situations. This could explain the mixed findings regarding individual differences in attraction research reviewed by Byrne (3). Future research might profitably examine the relationship between personality attributes and attraction under varying degrees of attitude agreement-disagreement.

In contrast to results in the current study, Reagor and Clore (8) reported that high anxiety subjects responded less negatively toward a dissimilar stranger and less positively toward a similar stranger than low anxiety sub-

jects. Reagor and Clore manipulated similarity of vocabulary test responses among children rather than attitudes, and employed a different anxiety measure than the Spielberger (9) scales of the present study. These methodological differences are probably sufficient to make the results of the two studies not comparable.

The results of the present study are in accord with other research on need for approval. In a study of the effect of approval motivation on attraction Bloom (1) concluded that high approval motivation serves to inhibit negative attraction responses. Crowne and Marlowe (5) reported a correlation of $r = .55$ between need for approval and a projective measure of *n*-Affiliation. Furthermore, in a sociometric study high SD subjects underestimated the number of "dislike" nominations they received. In the present study subjects with high SD scores were also social optimists, effectively recalling agreements and expressing liking for the accomplice. In interpersonal situations containing sufficient ambiguity to permit distortion of interpersonal cues, subjects with strong approval needs will perceive others positively and reciprocate the affect they perceive. Anxiety appears to operate in a complementary fashion to need for approval in socially ambiguous encounters with strangers.

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NEGATIVE SALIENCE IN IMPRESSIONS OF CHARACTER:
EFFECTS OF UNEQUAL PROPORTIONS OF POSITIVE
AND NEGATIVE INFORMATION*

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SUMMARY

Subjects were presented with varying amounts of favorable and unfavorable information describing behaviors of an unknown person and were asked to rate his character after each type of information and again a week later. Where the amount of positive information was greater than the negative, results indicated that a single negative behavior neutralized five positive behaviors, yielding an impression only insignificantly better than that based on five negative and five positive actions. Final ratings were compared with values predicted by a simple averaging theory. Empirical ratings were significantly lower than theoretical values except for two cases where an averaging theory would also predict negative impressions.

A. INTRODUCTION

A 1967 study by Richey, McClelland, and Shinkunas (13) reported a finding of negative bias in impressions of moral-ethical character. When subjects were presented with equal amounts of equally polarized positive and negative narrative information about a hypothetical stranger, the negative information had more influence on ratings of his character. Essentially the same result has since been obtained for female stimulus persons (12) and for subjects and stimulus persons of different ages (4), with the qualification that subjects tend to be more lenient in judging others of their own sex and, if young, their own age. Cross-cultural studies in Denmark (9), Germany (11), and Ecuador (8) all have found a similar negative bias.

At about the same time as the original study cited above, Briscoe, Woodyard, and Shaw (5) reported comparable findings for narrative descriptions which included other personality dimensions, as well as the moral-ethical.

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Feldman (7) had shown that negative stimuli had a greater weight than positive in ratings of pairs of trait adjectives.

Such disparity in stimulus weight would not be predicted from a simple averaging theory of information integration, in which equal weight of positive and negative information is implicitly assumed. A more sophisticated weighted-averaging theory, such as that proposed by Anderson (1, 2) could accommodate it, but at an empirical level, tests of averaging theories had typically found only small asymmetry between positive and negative information (e.g., 2, 16). While most of these studies had used lists of adjectives as the stimuli, at least one experiment involving a more naturalistic methodology (17) not only did not find a greater weight for negative stimuli but on the contrary reported evidence of salience of positive information for certain types of ratings. More recently, however, Anderson and his co-workers (3, 10) have also reported a greater weighting of negative information under certain conditions: e.g., ratings of the likability of groups of persons as distinguished from individuals. There is clearly a need for further delineation of the conditions under which negativity may be expected.

Richey *et al.* (13) listed a number of hypothetical reasons why their finding of negative bias might have occurred as an artifact of the method employed; some of these and additional alternatives have subsequently been explored. Cusumano and Richey (6) examined the possibility that the disproportionate negative influence might represent a contrast effect occurring only with stimulus materials differing rather sharply in polarity. They introduced two new sets of stimuli, one representing greater and the other smaller differences in valence extremeness than the descriptions used in the original study. The negative bias was replicated under all conditions of stimulus difference tested. Sheehan (15) investigated the hypothesis that the disproportionate influence of negative information was a function of medium of presentation. Reasoning that subjects might be more prone to make severe judgments of a hypothetical stranger described in print than of a real person whom they could see and hear, he replicated the original study using an actor who engaged in the same behaviors in videotape dramatizations. His results also supported the original finding. Richey, Richey, and Thieman (14) examined the possibility that the negative bias could be specific to judgments of strangers only. They asked subjects to imagine the effect of standardized incongruent information on their judgments of acquaintances who were already liked or disliked. Their results indicated that approximately half of the subjects initially resisted information which was inconsistent with their prior opinions of their acquaintances. Once this information was ac-

cepted, however, judgments of liked acquaintances fell farther in response to negative information than judgments of disliked acquaintances rose in response to positive information. The possibility, suggested by Richey *et al.* (13), that the negative bias is a function of the specific content employed in the original study, becomes increasingly remote as additional stimulus paragraphs are used. To date, some six forms of the written materials have produced similar results.

Another hypothesis mentioned by the original investigators was that the matching of amounts of positive and negative information in the descriptions may have produced an artifactual negative bias. They reasoned that a person who is half the time commendable and half the time reprehensible may in fact be statistically worse than average. "Perhaps one (correctly) expects other people to behave in a positive or neutral manner most of the time, with only occasional lapses," (13, p. 325). All studies published by Richey and colleagues have used equal amounts of positive and negative information; no evidence has been reported as to whether negative information still receives a heavier weighting where the proportion of negative behaviors is less.

The present study attempted to investigate this possibility by presenting subjects with a description of the other which was predominantly positive or predominantly negative and observing the effect on character judgments of different amounts of contrasting information. Whereas a simple averaging theory would predict an equal influence of each bit of equally polarized information on the final impression, the negative salience hypothesis predicts a disproportionate weight of negative information in all combinations of positive and negative.

B. METHOD

1. Subjects

Subjects were 344 undergraduates, 172 of each sex. Of these, 100 of each sex were used in a stimulus-standardization phase, and 72 of each sex in the study proper. All were enrolled at St. Louis University. Within sexes, subjects were randomly assigned to treatments.

2. Instrument

The descriptions used as stimuli were those standardized as Form II by Richey *et al.* (13). The complete paragraphs are as follows:

- a. *Positive.* Although C would have been happy to be rid of a subordinate whom he perceived as a potential rival, he gave good reports of this man's work to their superiors and gave him a deserved salary increase with-

out which the subordinate eventually would have quit. He never accepts credit for ideas of more creative colleagues and subordinates in his department but always gives full public recognition to the originator, even when he could pretend the ideas were his without the originator's knowing it. At a party which he and his wife attend together, he appears to enjoy her company and passes up the opportunity to flirt with younger women who find him interesting. He makes time for activities with his children even when he is tired and pressured by other demands. He contributes to the financial support of his elderly parents, who live on a meager pension, although it means that he must forego some luxuries enjoyed by others in comparable positions.

b. *Negative.* C supported an unfair personnel practice of his company because he thought protesting might hurt his position with his superiors; all employees were penalized by continuation of the practice. Whether or not he has given his secretary advance notice, he frequently has her stay after hours to complete rush assignments, although he does not work overtime himself. When he saw that his wife was working too hard, he might have obtained money to hire help for her by selling a cherished stamp collection, but instead he kept it and continued purchasing more stamps to add to it. He would not accept a transfer (his salary would have remained the same) in order to move to another location where there are superior treatment facilities for a health problem of his daughter, who has usually managed so far to get along where she is. He rarely writes or telephones his elderly parents and did not go to visit them during a recent serious illness of his mother.

3. *Standardization of Stimuli*

The stimulus materials had previously been standardized by Richey *et al.* (13) to yield ratings of matched polarity for the two paragraphs. For the present study, the value of each independent sentence was required in order to determine the theoretical value of each stimulus combination in which it would appear. For this purpose, 200 subjects were asked to rate individually the 10 sentences composing the stimulus paragraphs. All 10 sentences were presented to each subject, the stimulus person in each sentence being represented as a different individual (A, B, C, etc.). The sentences were presented in 10 different orders. The same internal sequence was retained throughout, but the series was begun with a different sentence (1 through 10) in each order. Sentence 1 was the first in the positive paragraph presented above, sentence 10 was the last in the negative. Subjects were asked to indicate their impression of the character of each of the stimulus persons on the seven-point ordinal scale used by Richey *et al.* (13). Mean values for the favorable or positive sentences were, in the order in which they appear in the positive paragraph above, 6.06, 6.16, 5.32, 6.21, and 6.33. Standard deviations, in the same order, were .67, .69, .80, .65, and .67. The negative sentences, in

the order in which they appear in the negative paragraph above, received mean ratings of 2.23, 2.14, 2.35, 2.23, and 1.99. Standard deviations were .71, .61, .80, .64, and .69 in that order.

4. Procedure

In the first session of the experiment proper, subjects were initially presented with a univalent segment of the stimulus information, either the entire positive or entire negative paragraph or part of one of them (one to five sentences), with the instruction that "We are interested in your impression of the person described in the following. Please read it carefully." After reading this material, they were asked to make a rating of the stimulus person's character on the seven-point scale used in the standardization phase. Following this first rating they were given an interpolated task, the drawing of two human figures, which required about 10 minutes to complete. (This task, which had previously been used by Richey and co-workers in related experiments, had no integral relationship to the study; it was intended as a diversion to reduce possible primacy effects. No rationale for requesting the drawings was given during the testing session; subjects had been told they would be given results and debriefing after the study was completed and analyzed.) They were then given a second segment of the stimulus material, opposite in valence to that presented first, with the information that it applied to the same person they had rated previously. Those who had received a major block of five positive or five negative sentences the first time now received a minor block of one to five sentences of opposite valence and *vice versa*. A second rating of the stimulus person was made on the basis of both segments of information. Because previous studies have shown that ratings may change through time, one week later subjects were asked to rate the stimulus person a third time, again on the basis of both segments of information. Since analysis of the data was done separately for each of the major block conditions (i.e., valence of the major block positive or negative), the experiment consisted of two $2 \times 5 \times 3$ factorial designs with repeated measures on the last factor, the independent variables being sex of perceiver, amount of information in the opposing or minor block (1, 2, 3, 4, or 5 sentences), and trial (rating 1, 2, or 3). Order of information (positive-negative or negative-positive) was counterbalanced in each design.

C. RESULTS

1. Major Block Negative

In this segment of the study, five negative sentences (N) were paired with one, two, three, four, or five positive sentences (P). Analysis of variance

indicated a main effect for amount of opposing positive information ($F = 3.59$; $df = 4/70$; $p < .01$). A specific comparison of the overall means for different amounts, by the Newman-Keuls procedure, indicated that the 5N1P condition yielded a rating significantly lower than that for any other combination ($\alpha = .05$). There were no significant differences among the other combinations. The analysis of variance showed no effect for either sex of perceiver or trial. The finding of no trial effect is unexpected, since in related studies (e.g., 13) a significant decline in ratings from Trial 1 to Trial 3 is typically found. The absolute decline from Trial 1 to Trial 3 is as great in the present study as in others yielding a trial effect, but the ratings on the first two trials were more variable under conditions of the present study.

Since the final ratings are the most important in testing the negative salience hypothesis, a comparison was made of the empirical findings for Trial 3 (sexes combined) with the predictions of a simple averaging theory (i.e., for each stimulus combination, the simple average of the independent values of the component sentences, as these were determined in the preliminary standardization). t tests of the difference between the obtained and theoretical values at each condition were made, with the use of the standard error of the empirical mean as the error term. These comparisons, with resulting t values, are shown in Table 1. The empirical values obtained for 5N5P, 5N4P, and 5N1P are significantly less than the theoretical values. For the combinations of 5N with 2P and 3P, the empirical values do not differ significantly from the theoretical.

2. *Major Block Positive*

In this design, five positive sentences were paired with one, two, three, four, or five negative. Analysis of variance indicated no main or interaction effects of sex, amount of information, or trial for these data. The absence of a trial effect again appears to be due to the greater variability of the ratings on Trials 1 and 2 in the present study than in those using equal amounts of positive and negative information. The main effect for amount of negative information approached but did not reach significance ($p < .10$). There was thus no significant difference between the impression based on the 5P1N combination and that based on the 5P5N.

The empirical findings for Trial 3, sexes combined, were again compared with the predictions of a simple averaging theory. When t tests were made of the differences at each level of amount, with the use of the standard error of the empirical mean as the error term, all resulting t values were significant (see Table 1).

TABLE 1
DEVIATIONS OF EMPIRICAL MEANS FROM PREDICTIONS OF AVERAGING THEORY
($n = 16$)

Condition	Empirical mean (A)	SD	Predicted mean (B)	Difference (A-B)	<i>t</i>
5N1P	2.31	.76	2.83	— .52	2.74*
5N2P	3.37	1.21	3.31	.06	N.S.
5N3P	3.31	1.15	3.56	— .25	N.S.
5N4P	3.12	1.21	3.85	— .73	2.35*
5N5P ^a	3.37	1.16	4.10	— .73	2.43*
5P1N	3.93	1.02	5.39	—1.46	5.61**
5P2N	3.56	.99	4.92	—1.36	5.44**
5P3N	2.75	.75	4.60	—1.85	9.73**
5P4N	3.62	1.16	4.34	— .72	2.40*
5P5N ^a	3.37	1.16	4.10	— .73	2.43*

Note: N = negative sentences; P = positive sentences.

^a Same subjects.

* $p < .05$.

** $p < .01$.

D. DISCUSSION

The results are interpreted as generally supporting the negative salience hypothesis. In eight of the 10 combinations of information studied, final impressions were significantly lower than would be predicted by a simple averaging theory. In two of the three cases where the major block of information was negative and the amount of positive information did not exceed 3/5 of the negative, the values of the final impressions did not differ significantly from the average of the component sentence values.

Why should these two combinations produce results in which the positive information received a more nearly proportional weight than in the other eight combinations? One possibility is that the impression predicted by a simple averaging model would itself be clearly negative—i.e., less than the neutral point on the scale—for these cases. If negative character evaluations are somehow more credible or acceptable than positive ones when mixed stimulus information is given, then impressions resulting from combinations where N is substantially greater than P may be acceptable with less distortion. Perhaps one can "give the devil his due" provided that he really is a certifiable devil. At the same time, however, the 5N1P condition was an exception to this generalization, yielding as it did a rating lower than the simple average of the independent sentence values.

In the case of a major block of positive information, the overall analysis of variance indicated no effect of amount of opposing information; the impression based on five positive sentences with one negative was therefore not

significantly better than that based on five positives and five negatives. It is as though the first offense by the stimulus person neutralized his positive behaviors, and additional negative actions only slightly worsened opinions about him.

Present results appear to negate another of the several possible explanations which have been suggested for the greater influence of negative information in the studies cited: i.e., that it is a function of pairing equal amounts of positive and negative stimulus information.

In attempting to integrate the results of studies which support the negative salience interpretation and others which do not, it has been noted elsewhere (6) that there are major methodological differences among studies in this area. While experiments by Richey and co-workers have used as stimuli narrative descriptions of behavior with moral-ethical implications and have obtained only character ratings, other investigators have used lists of adjectives or descriptions of various behaviors (e.g., 2, 16, 5) as stimuli, and for the dependent variable they have used ratings of, for example, likability (2) or role adequacy and various personality characteristics (17). All these variables—the dimension(s) of personality described, the stimulus format, the response measure—and other factors as well may be involved in apparent inconsistencies among findings.

While it cannot be concluded on the basis of present evidence that negative information is universally more heavily weighted than positive in impression formation, the series of related studies which includes this one consistently supports the hypothesis of negativity with regard to impressions of *character*. Heavier weighting of negative information has been found in character evaluations made from mixed behavioral descriptions designed to have moral-ethical implications (a) in various proportions of positive and negative information; (b) across a considerable range of stimulus polarity (6); (c) with qualifications, across sexes and ages (4, 12, 9); (d) across four cultures (13, 8, 9, 11); (e) whether the stimulus persons are hypothetical strangers or acquaintances (13, 14); and (f) whether the stimulus is a printed description or a videotape dramatization (13, 15).

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DIFFERENTIAL EXPERIENCE AND RECOGNITION MEMORY FOR FACES*

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SUMMARY

Two recognition memory experiments using photographs of black, white, and Japanese faces as stimuli were performed. In Experiment I, white Ss showed most accurate recognition memory for white faces, next most accurate recognition for black faces, and least accurate memory for Japanese faces. In Experiment II, both white and black Ss were tested with all three groups of faces. Again, it was found that whites did better on white faces than on black faces and did least well on Japanese faces. Blacks, in contrast, did best on black faces, next best on white faces, and also did least well on Japanese faces. This interaction of race of S with race of pictured face points to differential prior experience with various kinds of faces as the basis for these differences in memory performance. More generally, these findings support the applicability of the concept of schema to the processes by which faces are discriminated, processed, stored, and remembered.

A. INTRODUCTION

The folklore of social perception strongly supports the hypothesis that groups of faces distinguishable by racial labels may differ in the degree of ease with which their members can be discriminated and recognized from memory. The statement, "All Negroes look alike," is taken as serious psychological truth by some segment of the population and as the speaker's covert admission of racial prejudice by another. Which of these interpretations is more nearly correct remains to be investigated. This paper presents two studies concerned with the effects of the race of the pictured person and the race of the observer on the accuracy with which photographs of persons are recognized from memory. These studies were undertaken to determine how justified is the ubiquitous human belief in differential recognizability of faces of social and ethnic groups other than one's own. Further, if differen-

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tial recognizability of faces exists, it was intended to examine some alternative explanations of how it might occur.

The present investigators have conducted a series of recognition memory studies employing the human face as a stimulus (3, 9, 10, 11) in which a repeated finding has been that the major source of variance in face recognizability lies within the individual face. If one advances to the next level of abstraction beyond this observation, it is possible to consider that groups of faces, possessing some stimulus characteristic in common or eliciting some common responses on the part of observers, might differ systematically in their recognizability. If individual faces differ in recognizability, it is quite possible that groups of faces may also differ in the same way. The existence of such differences, and the factors which contribute to them, have enormously important social implications. For instance, lawyers and judges are aware that eyewitness identifications of criminal suspects under ordinary circumstances are far from perfectly reliable (19). If ordinary errors of eyewitnesses are compounded with special errors likely to occur when members of ethnic groups other than that one to which the witness belongs are involved, then the operation of our system of justice is impaired. Translated to a specific question, "Are whites poorer witnesses when asked to identify blacks than when identifying whites?" or *vice versa*? Further, it is possible to speculate that many social interactions which take place between members of two different ethnic groups may result in less than optimal satisfaction for the participants if one, or both, of them is "strained" in identifying the other.

What are possible factors which might account for differential recognizability of faces of persons identified as belonging to different ethnic groups? This paper considers three possibilities—effects of social attitudes, effects of differential experience, and possible effects of differences in distinctiveness of details shown in the photographs of faces. Two separate investigations of differential face recognition are reported, and the outcomes of these investigations are evaluated in the light of these possible three factors.

Much of the earlier literature concerning recognition of faces consists of studies involving the recognition of the ethnic group to which the face belongs in relation to S's expressed ethnic attitudes (1, 2, 5, 12, 16, 18). Only two studies have addressed the question of the effects of attitudes on S's recognition memory for faces of individual ethnic group members. Seeleman (17) found that pro-black white Ss recognized pictures of individual black persons more correctly than did white Ss who expressed less favorable attitudes. In a parallel study, Pulos and Spilka (15) used Jewish faces and Ss differing in expressed anti-Semitism. They found that more highly anti-Semitic Ss, in

contrast to lows, were more accurate in recognizing particular Jewish faces.

The question of the effects of ethnic attitudes on observers' sensitivity to the cues which facilitate recognition of faces is not simple. Use of social attitudes as a variable, without consideration of what factors mediate between attitudes and perceptual sensitivity or recognition memory, is an invitation to equivocal answers. Differential experience with or exposure to certain kinds of faces is a potential variable with greater explanatory power. Social attitudes and their concomitants may be one factor in producing differential experience; however, simple characterizations of attitudes as "positive" or "negative" are insufficient to predict their effects upon exposure.

Increased experience with stimulus classes as a facilitator of both discrimination and recognition memory for members of the class has been demonstrated repeatedly in laboratory studies. Gibson (7) reviews and discusses this literature; however, she cautions that laboratory studies should not be uncritically generalized to complex objects of the real world. Nonetheless, the extant literature argues that perceptual learning might well occur with human faces and might be an important variable in differential face recognition. If repeated exposures to a particular kind of face results in *S* acquiring a kind of mean or schema for a face, then *S*'s discrimination and remembering of new instances of similar faces may be facilitated by this schema. Instances of faces which deviate markedly from his schema may be processed with less efficiency.

Some recent research tentatively supports the idea that previous exposure to a type of face may facilitate recognition of particular instances of the type of face. Malpass and Kravitz (13) used photographs of blacks and whites with black and white *Ss*, and found that all *Ss* later recognized white faces more accurately than black faces, but that blacks performed better with black faces than did whites. In a more recent study, Malpass, Laviqueur, and Weldon (14) used the same set of stimuli with new *Ss* and again obtained an interaction of race of *S* with race of picture. Cross, Cross, and Daly (4) in another study obtained similar results. None of these studies was able, however, to eliminate an alternative possibility that their results might have occurred because the two sets of photographs employed differed in distinctiveness of the photographic details shown. Photographs of darker faces might show fewer details than photos of white faces simply because the resolution of film for details in dark areas is poorer than its resolution in light areas. The uniformly darker hair of blacks might also have conveyed less information to *Ss* than the more variable hair shades of whites. Goldstein and Chance (11) have found that when *Ss* are questioned about what they believe might

help them to remember faces, the modal verbal response has something to do with hair—amount, style, color, etc.

The two investigations reported in this paper were designed to determine whether obvious differences between the pictures *qua* pictures of blacks and whites could have influenced the results of these earlier studies. In both studies, Ss' performances on *three* groups of faces differing in race² were compared; the three groups of pictured faces were whites, blacks, and Japanese. Since Japanese faces are closer in skin tone to most white faces than to most black faces, and since Japanese, like blacks, are dark-haired people, performance differences observed to occur among these groups of pictures could be examined to determine the possible effects of either lack of detail in photographs or of the dark hair of all the persons pictured. Should white college Ss perform as predicted—best on white faces, but better on black faces than on Japanese—it can be argued that their superiority of recognition memory for white over black faces is not solely a function of the physical qualities of the photographs. If darkness of face and hair were the determiners of performance, then whites should be recognized better than Japanese, who should in turn be recognized better than blacks.

The prediction made in both studies that white Ss would perform best on white photographs, next best on black photographs, and least adequately on Japanese photographs is also consistent with a hypothesis that differences in recognizability of groups of faces is a function of S's differential experiences with various groups of faces. Although it might be proposed that the above order of performances could be a function of social attitudes, it appears more reasonable and straightforward to the present authors to propose that such differences will occur because white, Midwestern, college students have had more opportunities to look at black people than to look at Japanese people. An even stronger support for the differential experience hypothesis is sought in the second study, where both white and black Ss are tested. If ease of recognizing the kind of face is a function of the relative amount of past practice one has had with such faces, then black Ss should perform best on black faces, next on white, and most poorly on Japanese.³

Both experiments reported here utilized a simple recognition memory

² The present investigators use the term "race" in the common parlance to refer to differences in physiognomy correlated, or believed to be correlated, with membership in social groups labelled "races."

³ The authors recognize the possibility that an S's performance could be impaired by his belief or expectancy that one kind of face is going to be more difficult for him to recognize than another. This possibility was checked informally in the course of the first experiment. Some Ss were asked to state before they performed the task how many faces they thought they would be able to recognize correctly, and others were asked at

paradigm. In the first experiment, three groups of white college Ss saw either white, black, or Japanese faces. In the second experiment white and black college Ss saw photographs of all three kinds of faces. All Ss were instructed to look carefully at the faces shown in the study session, in order to be able to pick them out from among a group of highly similar faces in the test session to follow.

The pictures used in both experiments were prepared in the following manner. White pictures and black pictures were clipped from copies of college yearbooks; the Japanese pictures were original photographs obtained from a colleague in Japan⁴ and were taken from files of identification photos submitted by Japanese students applying for university entrance examinations. All photos showed the full-face view of the person, included the neck and a portion of the upper shoulders, and wore a neutral facial expression. Photos were eliminated from the sample if S wore glasses, had obvious facial blemishes, wore visible jewelry, or had a mustache or beard. Photos were also eliminated if their photographic quality (lightness, darkness, graininess, etc.) differed noticeably from the remainder of the sample. To eliminate visible clothing as a cue, pictures were masked with black construction paper so that only the face was visible. These vignetted pictures were then rephotographed to produce 2×2 positive slides.

B. EXPERIMENT I

1. Procedure

Ss were 72 white college women and 72 white college men who were told that the purpose of the experiment was to find out how recognition memory operates for realistic, complex stimuli. Ss were tested in small groups on either one or two occasions, depending upon whether they were to recognize their study pictures immediately or 48 hours later. Five to eight Ss at a time were tested in a very dimly lighted room. All had a good view of a lenticular projection screen, and Ss who participated in the delayed recognition condition were asked to remember and to resume the same seat in the room on the

the completion of the task how many they thought they had correctly recognized. Statements made after completion of the task were quite accurate reflections of real accuracy. Expectancy statements made before the task was performed were higher on the average in the group of Ss who were to view white faces than in those groups who were to view either black or Japanese faces. Individual expectancy statements, however, were *not* systematically related to individual performance on the task.

⁴ The authors are grateful to Professor Takayoshi Kaneko of the Tokyo University of Education, Tokyo, Japan for his kindness in obtaining the Japanese photographs used in this investigation.

second occasion. Groups of *Ss* who viewed either white, or black, or Japanese faces were tested in a counterbalanced order.

Ss were told that they would first be shown a study series of 14 photographs of faces, projected on the screen for approximately two seconds each. They were told to try to remember these faces in order that they might recognize them among a group of highly similar pictures to be shown in the test session to follow. In half the groups, the test session was conducted immediately after the study session; in the other half, 48 hours later. In the test session, the 14 study pictures were shown mixed in a random order among 70 distractor pictures of the same kind of people. The particular 14 study pictures, from the total sample of 84, to be used in the recognition test were varied systematically over groups of *Ss*; this procedure produced six different subsamples of study pictures, each of which was used at least once during the data collection. Each sample of pictures, whether study or distractor items, was selected so that half the faces shown were male and half were female.

For the recognition test, each *S* was given an answer sheet on which to mark his responses. The answer sheet showed numbers from 1 to 84 and beside each number were two columns—one labelled "NOT SEEN BEFORE" and the second labelled "SEEN BEFORE." *Ss* were reminded that the 14 pictures they had seen, either a few minutes before or two days before were now scattered among the 84 pictures they were about to see. They were told to make a checkmark next to the numbers of those pictures they believed they had seen before, in the column labelled "SEEN BEFORE." Unfamiliar pictures were to be checked under "NOT SEEN BEFORE." It was emphasized that only 14 pictures among the 84 had been seen before, and they were urged to check no more than 14. *E* pointed out that the format of the answer sheet made it easy to keep track of the number of items checked as "SEEN BEFORE."

As each picture of the test series was shown, *E* announced the number belonging to the picture being shown on the screen. At two intervals, about $\frac{1}{3}$ and about $\frac{2}{3}$'s of the way through the series, *Ss* were again reminded to check only 14 pictures. A few protocols were later discarded where *Ss* had violated this injunction.

Because data were collected in small groups, more cases were obtained in some conditions than in others. In order to produce groups of equal size for the analysis of variance, cases were eliminated randomly to produce 12 groups, comprised of 12 *Ss* each, with only the restriction that each group must contain two *Ss* who had viewed one of the six different subsamples of 14 pictures. The resulting 12 groups represented combinations of the follow-

ing conditions: three kinds of pictures, immediate *vs.* delayed recognition test, and male *vs.* female Ss. Each S contributed one score—his total accurate recognition memory for pictures.

2. Results

Analysis of variance of the data demonstrated that the race of the pictured person was the only variable showing a significant effect on accuracy of recognition memory ($F = 26.75$, $df = 2/132$, $p < .001$). Neither the degree of delay of the recognition test nor the sex of Ss was associated with any significant differences in performance.

Data were combined across the latter two conditions, and mean correct recognition scores for each of the three types of faces were obtained. Ss who viewed white faces averaged 10.98 pictures correctly identified as seen before; those viewing black faces averaged 9.33 correct; and those viewing Japanese faces averaged only 8.02 correctly identified.

Experiment II, described below, was undertaken to test more directly the effects of differential experience on recognition memory for faces. A group of blacks and a group of whites were tested for recognition with the use of all three kinds of faces. If differential experience is the important variable, then black Ss should reverse the order of mean number of correct recognitions obtained in Experiment I for white and black faces. They, like whites, should also do most poorly on Japanese faces. (The investigators were aware that blacks in our still largely segregated society probably do have relatively more compelling reasons to look at whites than *vice versa*; nonetheless, we assumed that the balance of their experience would lean more toward black faces than toward white.)

C. EXPERIMENT II

1. Procedure

Ss were obtained from a university⁵ where the undergraduate population was roughly half blacks and half whites. Data were collected in small, advanced psychology courses during regular class meetings. During the study session, Ss saw pictures of 30 male faces, 10 white, 10 black, and 10 Japanese, arranged in a mixed order. Four different sets of study pictures were used with the various groups from which data were collected. The physical arrangements of room, projector, etc., were the same as those in Experiment I. Ss were told to look carefully at each of the 30 faces, as they

⁵ The authors are grateful to the faculty and students of Lincoln University, Jefferson City, Missouri for their cooperation.

were shown, in order to be able to pick out those particular faces from among similar faces in the test session to follow. Each slide was projected for approximately three seconds.

During the recognition test, which followed immediately, Ss were provided with answer sheets arranged in three sets of double columns. The first set of columns was labelled "Japanese" and had two subcolumns—labelled "SEEN BEFORE" and "NOT SEEN BEFORE." Adjacent pairs of columns were provided for black faces and for white faces. Each row in each pair of columns was labelled with a letter-number combination. Ss were told that as each picture was shown, a second projector would project its appropriate letter-number combination beside it. In order to keep Ss' task as simple as possible and to make it easy to obey the injunction that they were to select no more than 10 pictures per group as "SEEN BEFORE," all pictures (10 study and 30 distractor pictures) of the same kind were projected in one sequence. First, Japanese pictures were projected, then black pictures, and finally white pictures. It was emphasized to Ss that in the sets of each kind of picture to be identified there were only 10 which had been "SEEN BEFORE," and they were told to check no more than that; however, they were told to be sure to check each picture in one column or the other.

2. Results

Inasmuch as data were collected in classroom groups, more data were taken than could actually be used in the final data analysis. To equalize the sizes of groups and to reduce sampling problems, four groups of 24 Ss each were formed by random selection—black men, black women, white men, and white women. Ss were selected with the restriction that approximately equal numbers of Ss in each group should have been exposed to the four different sets of study slides used.

Mean numbers of correct recognitions for these 96 Ss on each of the three kinds of faces are presented in Table 1. An analysis of variance performed on these data showed no differences in recognition memory accuracy associated with any variable, except race of picture ($F = 20.094$, $df = 2/88$, $p < .001$), and no differences attributable to any interaction, except the one between race of S and race of picture ($F = 13.362$, $df = 2/88$, $p < .001$). Both white and black Ss performed most poorly when tested with the unfamiliar Japanese pictures; each group performed best when tested with pictures of his own group and displayed an intermediate degree of accuracy when tested with the faces of the other group.

TABLE 1
MEAN NUMBERS OF CORRECT RECOGNITIONS FOR THREE
KINDS OF FACES: EXPERIMENT II

Subject groups	Oriental	Black	White
Black ($N = 48$)	4.333	6.042	4.992
White ($N = 48$)	4.542	5.542	6.750

Although the outcome of the analysis of variance confirms the prediction made for this study on the basis of the hypothesis that differential experience can affect ease with which various kinds of faces are recognized, a still more exact test can be performed. How many individual Ss actually achieved differential recognition scores in the order which would have been predicted by the hypothesis, as opposed to other possible orders? There were 13 possible orders in which scores could occur, including the possibilities that two, or even all three, of the scores could be equal. Among 48 white Ss, the predicted order ($W > B > J$) could be expected to occur by chance 3.69 times; this pattern was actually observed in 14 cases ($\chi^2 = 32.197$, $df = 1$, $p < .001$). Among black Ss the predicted pattern of scores ($B > W > J$) occurred eight times. The resulting chi square, while showing a trend in the predicted direction, did not reach significance. However, if the occurrence of five cases where the pattern ($B = W$) $> J$ is taken into account, the hypothesis may be restated to include the possibility that some blacks, owing to the lopsided nature of our society, might be expected to recognize blacks and whites equally well. When this revised hypothesis is tested, the resulting value of chi square is 6.277 ($df = 2$, $p < .05$).

D. CONCLUSIONS AND DISCUSSION

The experiments described in this paper support the conclusions that there are differences in the ease with which faces of persons belonging to different groups are recognized and that these differences appear to be some function of the observer's past experience with faces like those presented in the task. The results obtained do not suggest that differences in recognizability are a function of differences in the distinctiveness of photographic attributes of various kinds of faces. Although faces, as natural stimuli, are complex and it is not unequivocally demonstrated that past opportunities of our Ss to look at various sorts of faces is the only effective variable, the outcomes of these studies appear to be best accounted for as arising from differences in perceptual learning. Many earlier studies which sought to investigate face recognition phenomena in the context of Ss' social attitudes failed to specify the mediating mechanism between attitudes and the affected per-

formance; mostly, these early studies obtained conflicting and uninterpretable results. While many other factors might also produce different amounts of exposure to different groups of faces, social attitudes—and the patterns of selective social contact and interaction with which they are associated—may be one of those factors. It is also very likely that even when faces are ecologically present in the environment, attitudes may affect the degree of attention which observers pay to different classes of faces.

Some other sources of evidence also tend to lend additional support to a schema learning interpretation for the present data. Goldstein (8) has shown in a study using random shapes that *Ss* change their subjective ratings of apparent complexity of shapes in the direction of seeing the shapes as more simple after previous exposure to them. In an investigation which compared recognition memory for faces, inkblots, and snow crystals, Goldstein and Chance (11) found that faces were best recognized and snow crystals least well recognized by *Ss*. They interpreted their findings as supporting the proposition that the more familiar *S* is with the class of objects to which a set of stimuli belongs, the better will be his performance in discriminating and later recognizing instances of these stimuli. In another study, performed after the data for the studies reported here were collected, Elliott, Wills, and Goldstein (6) have demonstrated the direct effect of experience with faces on recognition memory for faces. *Ss* pretrained on a set of Oriental faces later performed better on a face recognition task, which utilized a different set of Oriental faces, than *Ss* pretrained on white faces or other *Ss* who received no pretraining. The evidence from this study is conclusive regarding the effects of experience. Malpass, Laviqueur, and Weldon (14), in a part of their study which involved training white *Ss* to recognize black faces, report a very similar finding. At the outset of their task, *Ss* recognized white faces better than they recognized black faces, but after 100 training trials, with feedback, the difference in accuracy of performance on the two kinds of faces had disappeared.

There appears to be a certain kind of truth in the statements that, "They all look alike." The subjects of the present studies apparently were better able to discriminate and later to recognize individual faces belonging to familiar groups of faces than those belonging to less familiar groups. It is important to note, however, that the absolute size of the recognition memory differences found in these studies is very small. Small as they are, they may, nonetheless, incline the person beset by them to avoid or to limit his interactions with these "difficult" faces. Small differences may also become extremely important in the judicial process where a person's freedom may be at stake.

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A FACTOR ANALYTIC STUDY OF RACIAL ATTITUDES*

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SUMMARY

A racial attitude survey was administered to 308 whites and 147 blacks in the Wichita, Kansas, area. A factor analysis was performed on 19 items, age, sex, and race yielding two specific (sex, genetics) and five common factors: (a) race, (b) relaxed association *vs.* tense isolation, (c) general racial tension, (d) youthful integration *vs.* aged segregation, and (e) separatist *vs.* desegregationist.

A. INTRODUCTION

Racism and racial attitudes are topics of concern for black and white individuals, as well as social psychologists. However, the exact definition of what comprises a racial attitude is vague at best. The usual procedure has been to pick some limited attitude and examine its relation to performance variables through manipulation or measurement. For example, Bickman and Kamzan (1) examined the effect of racial attitudes on need and helping behavior. A number of white females were approached in a supermarket by either a black or white individual requesting a dime to purchase either a high need (milk) or low need (cookie dough) item. They found significant effects related to need but not race.

Another examination of racial attitudes by Maykovich (7) found, by having subjects select five characteristics of 84 describing blacks, whites, and Japanese, a move from white conformity, superiority to cultural pluralism, or a reemphasis of racial distinction. This study, as with many others (8, 9) marked a very subjective view of what a racial attitude comprised.

On the other hand, there is little doubt as to the importance of understanding the racial attitudes. Elam (5) found that the determinants of interpersonal attitudes were race and belief, at least in the college setting where the research was performed.

Thus, the primary aim of this study was to attempt to identify attitudes which are functioning unities in behavioral space. Once such factors are

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identified, there will exist a basis upon which systematic research of racial attitudinal differences may be done. This study, as is true of initial factor analytic work in any area, was intended to serve as a "pilot" project to provide a reference point for future projects of this nature.

B. METHOD

1. *Instrument*¹

A racial attitude survey composed of four demographic items (age, race, sex, income) and 22 questions concerning racial attitudes was developed by the author with the aid of a social psychology class at Wichita State University. The racial items included such things as "Do you favor a separation of the races?" and "Would you mind living in a racially mixed neighborhood?"

2. *Subjects and Administration*

The social psychology class involved was provided with the questionnaire. Each student was asked to administer it to at least 12 individuals. The students were requested to attempt to balance their subjects in terms of race and sex, limiting race to white and Negro. Also, they were not to give the survey to any close friends.

Each subject was provided with an answer sheet, and was informed that his responses were to be kept confidential, and that he should not place his name anywhere on the answer sheet. The interviewer read each item of the survey to the subject who responded on the answer sheet.

The students collected a total of 455 subjects. An analysis of the sample may be found in the Results section.

3. *Analysis*

A demographic breakdown of the sample in terms of age, sex, and race was first computed to check the adequacy of the sample. Three items were eliminated from the analysis, one because a large number of subjects failed to respond to it ("Who do you think are more prejudiced, blacks or whites?"), one because of lack of variance ("The problems of racial tension in Wichita have improved"), and one because its responses were categories and thus unsuitable for correlational analysis (the term by which Negroes prefer to be called).² Also, because 31 percent of the sample refused to give their income, this variable was eliminated from the correlational analysis. These

¹ A complete copy of the survey may be obtained from the author.

² Incidentally, 72.6% of the Negroes preferred to be called "blacks," while the term "Negro" was preferred by only 16.8% of the sample.

eliminations resulted in a final total of 22 variables: age, race, sex, and 19 racial attitude questions.

Product-moment correlations were calculated among the variables proceeding to a factor analysis as described in the Results section.

C. RESULTS³

1. *Sample Description*

The sample was highly varied in many aspects. The age range was from 16 to 70 years. Occupations varied from unemployed to physician. The sample consisted of 153 white males, 155 white females, 69 black males, and 78 black females for a total of 455 subjects. For those reporting income, white males averaged \$10,685 per year, white females \$9719, black males \$7495, and black females \$6384.

2. *Factor Analysis*

Eigenvalues were computed from the correlation matrix. The Scree test (2) indicated seven factors. An iterative principal axis solution was applied to the correlation matrix until the communalities stabilized in the third decimal place. A Kaiser Varimax orthogonal rotation (6) was applied to the factor matrix, followed by a Maxplane (4) oblique rotation, three graphical rotations (3), and a Maxplane clean-up yielding a 72.1 percent .10 hyperplane. If the absolute value of a loading in the factor pattern was greater than .275, it was considered salient.

D. DISCUSSION

1. *Factor I: Race*

The highest loading on this factor was race (+.946). Whites felt that they had a better chance for the same job than a black (+.522) and that they were less discriminated against in any area (— .895). Also, they tended not to have a child being bussed (+.351) and did not feel more abused if pushed by a Negro than by another white (— .311).

2. *Factor II: Relaxed Association vs. Tense Isolation*

This factor is probably the most significant finding of the study. It indicated that racial isolation and tension, though not necessarily in a cause and affect relationship, tend to be functionally related. The individual (*a*) never

³ Such matrices as R , V_o , V_{rs} , C_r may be obtained from the author at the address shown at the end of this article.

felt he had to play a role with the opposite race (+.487), (b) did not feel that Negroes wished more than an equal opportunity (-.305), (c) did not feel ill at ease driving through a neighborhood primarily of the opposite race (-.520), and (d) did not feel more abused if pushed by a person of the opposite race (-.734). Also (a) he tended to have several friends of the opposite race (+.454), (b) had a child being bussed (-.285), (c) felt that bussing is desirable and necessary (-.322), (d) would approve of his daughter marrying a person of the opposite race (-.412), and (e) wouldn't mind living in a racially mixed neighborhood (-.395). Examining this factor, one notices that attitudes and behavior involving contacts with the individual's opposite race also involved lowered tension with the opposite race and *vice versa*. Finally, it is important to note that the race variable was *not* involved in this dynamic.

3. Factor III: General Racial Tension

This factor simply was a measure of the general racial tension an individual felt. If an individual felt that racial attitudes had improved over the last 15 years (+.347), he also felt that both the Negro child (-.857) and the white child (-.731) tended to feel less racial tension.

4. Factor IV: Sex

Factor four was a specific factor related only to sex. Future research of this type will require a greater effort to tap sex-linked racial attitudes.

5. Factor V: Youthful Integration vs. Aged Segregation

An age-linked attitude toward integration was found in this factor. Younger persons (-.507) tended not to mind living in a racially mixed neighborhood (-.279) and did tend to live within a block of a person of the opposite race (-.470).

6. Factor VI: Genetics

Factor six was also a specific factor. The one item which loaded this factor (-.709) was the only genetic-linked item in the survey: "Do you think that there are inborn behavioral characteristics related to race?" The inclusion in future research of such items as "Do you think that Negroes are naturally athletic?" would probably result in this factor becoming a common rather than a specific factor.

7. Factor VII: Separationist vs. Desegregationist

This factor is mainly a contrast in attitudes of those who favored race separation vs. those who did not. The person who did not favor such a separation (+.512): (a) did not mind living in a racially mixed neighborhood (-.291); (b) felt that whites understood the Negro's problems in the American society (+.304); (c) felt that black studies are important for both blacks and whites (-.399); and (d) perceived that racial attitudes have improved in the last 15 years (+.471).

E. CONCLUSIONS

The factors found in this study provided initial information as to the actual empirical content of racial attitude. It is interesting to note that the actual race of the individual was related only to one factor and that that factor consisted mainly of pragmatic items involved with actual discrimination. Only one of the more emotionally loaded items seemed to be race-related.

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NEED, RECEIPT OR DENIAL OF AID, AND ATTITUDES TOWARD THE BENEFACTOR*¹

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SUMMARY

The primary objective of this study was to determine if the results of an international simulation reported by Morse and Gergen (4) could be replicated in an actual aid situation where the applicant for aid was himself characterized by a definable level of financial need. A theoretical model was developed that yielded four research hypotheses concerning the combined impact of need and receipt or denial of aid upon subjects' attitudes toward a benefactor. Tests of these hypotheses were based on a questionnaire survey of students enrolled in a small, state-supported university in the South-eastern United States during the Winter quarter, 1972. Data were consistent with three of the four research hypotheses.

A. INTRODUCTION

The stimulus for the present research was an international simulation conducted by Morse and Gergen (4). They were interested in exploring the general question of whether the receipt of material aid had an impact on a recipient's attraction toward his benefactor. In pursuing this question, two additional independent variables were introduced: the recipient's level of need and the extent to which the provision or denial of aid was seen as personal. The data generated by this simulation demonstrated that the receipt of material aid had little or no impact on attitudes toward the donor, but the denial of aid had a significant negative impact. The greatest antagonism was generated by the denial of aid to subjects representing countries with high need. In general, attitudes toward the donor and his country were unaffected by the personalization of the donor's response to aid applications.

The implications of these findings for governmental programs, such as foreign aid, are both obvious and fundamental. However, two characteristics of the research severely limit legitimate generalization to the variety of aid/

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¹ The author thanks Dave Robinson and Don Kelley for their contribution to the execution of this project.

donor situations that characterize our society. First, the findings are based on a simulation. While simulations constitute an important methodology, one cannot accept uncritically the generality of their results (5). Second, the aid situation that was constructed cast the subject in the role of a *representative* of someone in need (a country) rather than in the role of a needy person. The rather scanty research extant on the representative (2) makes it quite clear that the difference between the two is important theoretically. In practical application, domestic aid programs usually involve applicant/donor as opposed to representative/donor relationships.

In view of the foregoing, the primary objective of the present research was to determine if the major results of the Morse and Gergen simulation could be replicated in an actual aid situation where the applicant for aid is himself characterized by a definable level of financial need. Specifically, the research was designed to evaluate the consequences of the receipt or denial of student aid as it affected students' attitudes toward their university.

Informed by some of the *ex post facto* explanations offered by Morse and Gergen, by earlier theoretical work of Jones and Davis (3), and by Thibaut and Kelley's principles of social exchange (6), the investigator developed the following theoretical model to generate specific research hypotheses.

(a) Benefit which deviates substantially from a subject's comparison level is personalized in the direction of the deviation; benefit which does not deviate substantially from a subject's comparison level is impersonalized.

(b) Personal evaluation tends to be reciprocated; therefore,

(c) Benefit which exceeds substantially a subject's comparison level leads to increased attraction toward the benefactor;

(d) Benefit which is substantially below a subject's comparison level leads to decreased attraction toward the benefactor; and

(e) Benefit which does not deviate substantially from a subject's comparison level is irrelevant to attraction toward the benefactor.

If one assumes that when level of need is low, the receipt of aid substantially exceeds a subject's comparison level, and when level of need is high, the denial of aid falls substantially below a subject's comparison level, the following hypotheses are generated:

H_1 = If a subject's level of need is low, the receipt of aid results in increased attraction toward the benefactor.

H_2 = If a subject's level of need is high, the denial of aid results in decreased attraction toward the benefactor.

Similarly, if one assumes that the denial of aid to subjects with low need and the awarding of aid to subjects with high need do not deviate sub-

stantially from the subjects' comparison levels, it can be hypothesized that

$H_3 =$ If a subject's level of need is low, the denial of aid has no effect on attraction toward the benefactor.

$H_4 =$ If a subject's level of need is high, the receipt of aid has no effect on attraction toward the benefactor.

Cross-sectional versions of these hypotheses were subjected to empirical test.

B. METHOD

Subjects were students enrolled in a small, state supported university in the Southeastern United States during the Winter quarter, 1972. Three major categories of students were identified: students who applied for and received student financial aid; students who applied for but were denied student financial aid; and students who neither applied for nor received student financial aid (a quasi control group). The university's Office of Student Financial Aid provided a list of all students who applied for aid during the quarter under study with a designation of those to whom aid had been granted. From among those students who applied for and were awarded aid, a sample of 120 was selected by means of a random procedure. Only 94 students who applied for and were denied aid were still enrolled in the university; therefore, all were designated subjects. The master enrollment tape maintained by the Office of the Registrar provided the enumeration of the remainder of the student body. A sample of 170 was selected from this enumeration by computer with the use of a random start and every n th case.

An eight-page, fixed-format questionnaire was mailed to each subject under the auspices of the Department of Sociology and Anthropology. The questionnaire was titled SURVEY OF STUDENT ATTITUDES AND OPINIONS. It consisted of a variety of personality scales, measures of organizational involvement, birth order, semantic differential, measures of attitudes toward several objects, including attitudes toward the local university, a categorical estimate of family income, and a subjective evaluation of family income (above average, about average, somewhat below average, or much below average). Since aid status was already known, no specific questions concerning student financial aid appeared in the questionnaire.

The overall response rate without any follow-up procedure was approximately 50 percent.² The response rate by subsample differed by only one percent. Eighty-five respondents neither applied for nor received aid (con-

² No follow-up was conducted, since final exams for Winter quarter began only one week after the cutoff date for responses to the original mail-out.

trol group); 46 applied for but were denied (denied group); and 60 applied for and received aid (received group).

Each subsample was divided into high need and low need groups. Need was assessed by means of a two factor index: a categorical estimate of family income and a subjective, comparative evaluation of family income. The index was constructed such that low need was defined as income greater than \$9000 combined with a subjective, comparative evaluation of family income as about average or greater than average. All other combinations of answers to the two income questions were defined as high need.

Attraction toward the benefactor (the university) was measured by means of a six-item semantic differential. The six items comprising the measure were selected from an original set of 10 on the basis of interitem correlations $\geq .60$. The theoretical range for the measure is 6-42.

C. RESULTS

Test data appear in Table 1. The data are consistent with H_1 , H_2 , and H_4 . Specifically, among subjects whose level of need was low, those who received aid were significantly more attracted to the university than were those in a control group ($t = 1.78$, $p < .05$, one-tailed). Among subjects whose level of need was high, those who were denied aid were significantly less attracted to the university than were those in a control group ($t = 3.10$, $p < .005$, one-tailed). Among subjects whose level of need was high, those who received aid did not differ from a control group in their attraction to the university ($t = 1.00$, $p = \text{n.s.}$, two-tailed).

Contrary to H_3 , the data reveal that subjects with low need who were denied aid were significantly more attracted to the university than were their control counterparts ($t = -4.27$, $p < .001$, two-tailed). Indeed, subjects with low need who were denied aid exhibited significantly greater attraction to the university than did subjects with low need who received aid ($t = 2.12$, $p < .05$, two-tailed).

It should be noted that the two control groups had very similar attraction scores ($t = .58$, $p = \text{n.s.}$, two-tailed). This lends some support for their use as control groups.

D. DISCUSSION

One of the major differences between this study and the Morse and Gergen simulation was that in the simulation the subject was a representative of someone in need (a country), while in this study, the subject himself manifested a definable level of need. It was expected that this difference would alter the dynamics by which treatment by a benefactor was trans-

TABLE 1
MEANS AND STANDARD DEVIATIONS OF ATTRACTION SCORES BY
NEED AND AID CONDITIONS

Aid condition	High need			Low need		
	Mean	SD	N	Mean	SD	N
Received	28.65	2.63	40	30.05	2.32	20
Denied	27.04	2.54	24	31.64	2.40	22
Control	29.30	2.74	30	28.91	2.67	55

lated into affective response. When one represents another, the behavior evoked by his client may or may not be interpreted as personally evaluative. Numerous explanations are available to account for successful or unsuccessful efforts on behalf of a client. When one represents himself, the responses evoked from others are significantly more likely to be personalized. In cases involving need and the request for aid, responses from the benefactor minimally reinforce or call into question the subject's assessment of his life circumstances. Further, the subject's perceptions of his life circumstances constitute an important criterion for distinguishing between altruism and equity. This distinction, in turn, is basic to the subject's affective response to the treatment he receives. Specifically, equitable responses are postulated as impersonalized and as having no affective consequences, whereas altruistic responses (and their obverse) are postulated as personalized and as having affective consequences.

Three of the four research hypotheses generated by this line of reasoning were supported by the data. Simultaneously, the major findings of the Morse and Gergen simulation were replicated, providing support for the external validity (1) of those findings. The discrepancy between the two studies and between the theoretical model and the research data occurred in the low need condition when aid was denied. Morse and Gergen found that under these circumstances attitudes toward the benefactor underwent negative change, though this change was slight in magnitude. The theoretical model generated the prediction that denial of aid under these circumstances would have no affective consequences. Neither outcome was observed in the current study; rather attitudes underwent significant positive change under this combination of circumstances.

An explanation for the departure of the data from the prediction of the model was sought in the treatment which the student who was denied aid received from the University. It was discovered that each rejected applicant was scheduled for a personal interview with the Director of the Office of Student Financial Aid who informed him that the basis for the refusal of aid was the failure to meet need-criteria. Additionally, each was

given the deadlines for subsequent application periods, copies of application forms, and offers of assistance in the completion of the forms in the future.

A careful examination of this sequence of events lends additional credence to the proposed theoretical model. To be informed that he failed to meet the need-criteria for aid confirmed the low-need subject's own assessment of his level of need, and to be denied aid was considered equitable and impersonal. The additional responses of the benefactor, however, conveyed a message of altruism and was personalized positively. The subject reciprocated the positive affect in the form of a more favorable attitude toward the university.

While those subjects whose self-defined needs were high received the same treatment as did those whose self-defined needs were low, in the case of the former, the Director's statement that the student did not meet the need-criteria for aid challenged the veracity of the student's own assessment of his life circumstances. This challenge to the student's view of himself and his needs in turn doubtlessly impacted the interpretation of all other responses by the Director. Empirically, it is clear that these additional responses were insufficient to offset the affective consequences of being denied what was defined as greatly needed.

In future research, independent tests of the assumptions of personalization must be built into the research design. The failure of Morse and Gergen to find any main effect for their personal-impersonal manipulations does not obviate this need. They did not manipulate the personalization of the treatment of the subject, but rather the treatment of his client.

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THE EFFECTS OF CROWDING AND INTERPERSONAL
ATTRACTION ON AFFECTIVE RESPONSES, TASK
PERFORMANCE, AND VERBAL BEHAVIOR*¹

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SUMMARY

This report describes two American studies in which 48 male college students and 144 male high school students, respectively, were assigned to high or low spatial density conditions and instructed to construct, as a team, an erector set model within a 40-minute period. High school students were assigned to high, middle, and low attraction groups on the basis of their ratings of their fellow classmates. The results indicated that subjects in both studies did not find those crowded conditions to be aversive or stressful or to influence their affective ratings of their fellow subjects. In the second study, while density had no main effects on task performance, under middle attraction conditions performance was impaired as a function of density. These findings suggest that while crowding did not necessarily result in a stressful experience, both social and spatial elements were important in obtaining optimal group productivity. Overall, negative, and neutral verbal behavior increased as a function of density. Neutral verbal behavior increased in high and middle attraction groups, while it slightly decreased in low attraction groups as a function of density. There were no effects of density and attraction on positive verbal behavior. It appears that crowding intensified social interaction in a negative manner, supporting the contention that crowding can have detrimental effects on human behavior. Crowding should be dealt with as a multidimensional concept that interacts with different settings, individuals, and activities.

A. INTRODUCTION

In recent years there has been growing concern over the effects of overpopulation and crowding on human behavior (9). Zlutnick and Altman (31),

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in a 10 year review of the *Reader's Guide to Periodic Literature*, outlined many of the popular speculations on the effects of crowding, and they concluded that these speculations have received little solid research support.

Research examining the effects of crowding on lower animals (5, 6, 23) has indicated serious physiological and social breakdowns resulting from prolonged crowding. Generalizing from these studies, Dubos stated, "the readiness with which man adapts to potentially dangerous situations makes it unwise to apply directly to human life the results of experiments designed to test the effects of crowding on animals" (8, p. 207).

In evaluating the effects of crowding on human beings, correlational investigations (14, 28, 30) have found a general tendency for death rate, infant mortality rate, public assistance rate, crime rate, disease rate, and rate of admissions to mental hospitals to increase as a function of density. However, many of these significant relationships vanished when such variables as social class, ethnicity, education, and migration were controlled for. Different measures of population density, as well as different methods of partialling out confounding variables, have produced an inconsistent picture of the relationship between density and pathology.

Being crowded is generally regarded as a negative experience, involving the perception of spatial restriction, as well as the experience of physiological and psychological stress (29). Experimental investigations with human subjects (13, 15, 27) have generally found that reports of affective experience were more negative in crowded than in uncrowded conditions. However, these results do not necessarily indicate that crowding functions as a stressor.

Freedman, Klevansky, and Ehrlich (12) conducted a series of studies designed to assess more directly the notion that the effects of density on humans can be explained as reactions to stress. They theorized that high density functions as an aversive stimulus capable of raising drive level and interfering with performance on complex or not well learned tasks. To test this hypothesis, they placed groups of subjects in different sized rooms and had them perform a series of motor and cognitive tasks. They found no effects or trends attributable to density, and they concluded that density does not function as an aversive stimulus like electric shock or loud noise. The two studies presented below attempted to clarify further the effects of crowding on task performance and affective responses.

B. METHOD FOR BOTH EXPERIMENTS

Subjects were run in groups of four in the same 8 × 10 foot room. The only furnishings were a work table and four chairs. Subjects in low spatial

density conditions were provided 20 square feet per person, while in high spatial density conditions, they were provided six square feet per person. In the low density condition, the table provided total work area of three square feet per person; while in the high density condition, the table allowed a total work area of 1.5 square feet per person. While the constriction of total space contributes to crowding, the use of different sized tables was designed to maximize the probability that subjects would violate one another's personal space in coordinating task operations.

One erector set (Erector Mark 40 by Gilbert) was provided for each group with four sets of tools and instructions for the construction of a ladder truck model. This task was selected as it was highly complicated and required a high amount of verbal and physical interaction in coordinating task construction. Task performance was defined by the total number of correctly positioned pieces.

Subjects were instructed to construct the model, as a team, within a 40-minute period. They were told to proceed along any lines they all decided upon as long as they all actively participated in the construction of the model.

Following completion of the experimental task, subjects were given the Subjective Stress Scale (19) and nine-point rating scales designed to assess the degree of pleasantness of the experience and the degree to which they liked working with their peers. Items were included to ascertain whether or not subjects were aware of the spatial restriction and felt crowded.

C. EXPERIMENT 1: CROWDING AS A STRESSOR

1. *Method*

a. Subjects. Subjects were 48 male undergraduate students in introductory psychology at a Midwestern university.

b. Procedure. Subjects were told that the purpose of the research project was to examine team coordination of task behavior. Each subject was randomly assigned to high or low spatial density conditions.

2. *Results*

High density subjects rated the adequacy of the working space significantly more negative ($t = 8.43$, $df = 46$, $p < .001$) and themselves as being significantly more crowded ($t = 4.07$, $df = 46$, $p < .001$) than did low density subjects. Ratings of the adequacy of space were more negative than were the "crowdedness" ratings ($t = 3.50$, $df = 23$, $p < .01$). No significant differences were obtained in ratings of subjects' affective reactions to the experience or of their fellow subjects or in terms of task performance.

3. Discussion

In much of the literature in this area, there seems to be some confusion in discussing crowding as a physical or psychological phenomenon. In this study, the terms "high density" and "crowded" have been used interchangeably. Stokols (29) distinguished between these two concepts and conceptualized density as involving a limitation of space, while crowding is seen as an experiential state in which the individual perceives a spatial restriction and experiences stress. Accordingly, some high density conditions (e.g., a cocktail party) may not lead to the experience of being crowded. In the present study, the focus has been on the effects that a high density situation has on the individuals who are experiencing it. It appears that subjects discriminated between their assessment of the physical and the psychological dimensions of the experiment. This observation supports the contention that physical parameters of an environment account for only a portion of the variance contributing to the subjective experience of crowding, and that social factors are probably involved. It is most interesting to note that even when this subjective state of crowding was experienced, it was not necessarily perceived as aversive nor did it necessarily negatively affect attraction responses to others. These results support Freedman *et al.*'s contention (12) that crowding, in and of itself, does not function as a stressor capable of raising drive level and impairing task performance. Freedman suggested that if crowding does affect behavior, it does so as a highly complicated social stimulus.

D. EXPERIMENT 2: CROWDING AS A SOCIAL STIMULUS

A number of experimental investigations have examined the effects of crowding on children's social behavior. Hutt and Vaizey (18) and McGrew (24) found a trend toward more aggressive behavior and less social contact in high density conditions. Hutt and McGrew (17) found that social interaction among children and with adults, and aggressive behavior increased as spatial density increased. Price (25) observed that crowding yielded an increase in noninteractive behavior and a decrease in social interaction, but had no effect on aggression. Loo (20) found significantly less aggression in high density conditions only among boys. Subjects in her experiment also spent more time in solitary play in high density conditions. These studies indicate that while the effects of density on aggressive behavior are unclear, there is a general tendency for social interaction to decrease.

Griffit and Veitch (15) found that college students' attraction responses to an agreeing or disagreeing stranger were more negative in crowded experimental conditions. Several authors (13, 27) found that college males re-

sponded more negatively to crowded conditions, while females responded more positively to crowded conditions. These studies indicate that in certain situations, crowding can adversely affect social behavior and subjects' perceptions of one another and that crowding affected male groups more negatively than female groups.

Freedman (11) suggested that crowding has no effect of its own; rather it intensifies the ongoing social situation. To test this hypothesis, female college students were asked to present extemporaneous speeches to groups of fellow students under conditions of high or low density and under positive or negative speaker performance evaluation by the group. He found that while density had no main effects on subjects' ratings, pleasant conditions were rated as more pleasant and unpleasant conditions were rated more unpleasant as a function of spatial restriction.

Similarly, the characteristics of individuals with whom one interacts could also be expected to affect one's responses to crowded situations. Altman and Haythorn (1) obtained significant interaction effects between amount of social withdrawal and incompatibility on certain personality traits among pairs of sailors socially isolated in a small room. MacDonald and Oden (22) compared the performance and interpersonal behavior of married couples subjected to crowded or spacious living conditions and found no significant differences.

These studies suggest that certain settings, activities, and individuals can affect the experience of spatial restriction in such a way as to negate unpleasant aspects of a crowded situation and, in some instances, intensify positive elements. The purpose of the second experiment was to examine the effects of spatial density and interpersonal attraction on task performance, affective responses, and verbal behavior.

1. *Method*

a. Subjects. Subjects were 144 male sophomore students from a high school in Chicago. The student body was predominantly Caucasian, Catholic, and middle class.

b. Procedure. Subjects were told that the purpose of the study was to examine the effects of team composition on group task performance. Subjects were informed that they would be given various personality inventories, an attitude survey, a background questionnaire, and forms for rating their fellow students, and that, on the basis of this information, they would be assigned to groups of four students to construct a model.

Subjects were assigned to high, middle, or low attraction groups on the

basis of responses to the nine-point rating scales of their fellow classmates. High attraction groups were composed of students whose attraction ratings were within the top third of the scale ($\bar{X} = 1.72$). Middle attraction groups were composed of students whose attraction ratings were within the middle third ($\bar{X} = 4.46$). Low attraction groups were composed of students whose attraction ratings were within the bottom third ($\bar{X} = 6.95$). Student t tests obtained significant rating differences between these groups at the .001 level. These groups were randomly assigned to conditions of high or low spatial restriction.

Credibility was added to the attraction manipulation by offering bogus information to the subjects based on the personality tests, attitude survey, and background questionnaire. Byrne (4) describes a number of studies in which such bogus information about assumed similarity between subjects influences interpersonal attraction. He found that, in general, as assumed similarity of personality, attitude, and background increases, so does the degree of interpersonal attraction. In this study, manipulations similar to those used by Back (2) were used to establish the desired expectations in the high, middle, and low attraction groups.

All sessions were tape-recorded and rated independently by two raters. The rating procedure and the method of training raters were modifications of the procedures described by Bales (3). Raters scored each tape for three variables: the frequencies of positive, negative, and neutral verbal behaviors. Average rater reliability across these variables was .96.

2. Results

High density subjects rated the adequacy of the working space significantly more negative ($F = 67.65$, $df = 1/138$, $p < .001$) and themselves as being significantly more crowded ($F = 40.31$, $df = 1/138$, $p < .001$) than did low density subjects. Ratings of the adequacy of space were more negative than ratings of the degree to which one felt crowded ($t = 2.10$, $df = 71$, $p < .05$). Density had no significant effects on the pleasantness ratings, the degree to which subjects liked working together, and the Subjective Stress Scale ratings. There were no significant density by attraction interaction effects on any of these measures.

Density had no main effects on task performance, but there was a significant density by attraction interaction ($F = 3.68$, $df = 2/30$, $p < .05$). *Post hoc* Dunn's Test yielded significant differences only between middle attraction groups ($t = 2.57$, $df = 6/30$, $p < .05$) indicating more impairment as a function of density.

The effects of density and attraction on the frequency of total, positive, neutral, and negative verbal behavior were analyzed by means of four separate two-way analyses of variance. This statistical treatment was used as opposed to a more economical method because the nature of the verbal behavior categories resulted in a biased distribution of scores favoring neutral verbal behavior and violated the analysis of variance assumption of homogeneity of variance.

Total verbal behavior increased as a function of density ($F = 7.23$, $df = 1/30$, $p < .01$), as did both neutral ($F = 13.89$, $df = 1/30$, $p < .01$), and negative, verbal behavior ($F = 9.57$, $df = 1/30$, $p < .01$). Density had no effect on positive verbal behavior, and there were no significant density by attraction interactions except in the case of neutral verbal behavior ($F = 4.87$, $df = 2/30$, $p < .05$). *Post hoc* comparisons of cell means yielded significant differences between high attraction groups ($t = 3.90$, $df = 3/30$, $p < .05$) and middle attraction groups ($t = 2.87$, $df = 3.30$, $p < .05$) indicating an increase in verbal behavior in these groups as a function of density. This pattern was reversed in low attraction groups in which verbal behavior slightly decreased as a function of density. The general pattern was similar in terms of total verbal behavior, except that the interaction effects were not significant.

3. Discussion

Loo stated that how the experimenter structures the activity and architecture of the setting will greatly determine "(a) whether a feeling of crowding is experienced and if so, (b) how crowding affects the people involved" (21, p. 4). The most noticeable difference between the present study and others (12, 15, 27) was the nature of the experimental task. This experiment involved a well defined construction task that required much physical and verbal interaction in assembling a complicated model. Subjects in crowded conditions were aware of the spatial restriction and rated themselves more crowded than subjects in uncrowded conditions. In spite of this they, again, did not perceive this crowding as aversive or stressful nor did it negatively affect attraction responses to others. It is possible that subjects were able to submerge themselves in the physical activity of model construction and "tune out" potentially negative aspects of this situation.

The fact that crowding did not affect task performance except in middle attraction groups raises the question as to whether crowding was selectively functioning as a stressor in middle attraction groups but not in high or low attraction groups. The conceptualization of the impairment of task perfor-

mance in middle attraction groups as a function of density as a stressor is suspect in this study for several reasons. First, subjects' ratings of perceived stress did not correspond to the observed patterns of task performance among the groups. Second, task performance in middle attraction, high density groups did not differ significantly from task performance in high and low attraction groups, regardless of density. Only middle attraction, low density groups significantly departed from this pattern. These facts suggest that several other factors, both social and spatial rather than stress, were operating to maximize productivity in middle attraction, low density groups.

First, in middle attraction groups, there were little or no potentially interfering or distracting social elements that one might expect of high or low attraction groups, as subjects in middle attraction groups were basically neutral in regard to one another. Second, the distinguishing feature in accounting for differences between middle attraction, high and low density groups was the fact that the adequacy of the working space was relatively optimal in coordinating task operations in low density conditions. If this were not so, one would expect a rise in task performance in middle attraction, high density groups that paralleled the rise in the middle attraction, low density group. Instead, task performance in middle attraction, high density groups was lower than performance of the other groups.

Several authors (21, 29) have suggested that one of the reasons that Freedman *et al.* (12) failed to obtain any effects of density was due to the fact that the individual nature of the experimental tasks minimized interaction with others and thereby reduced the probability that members would violate one another's personal space. They further suggested that the probability that task performance would be impaired and that individuals would perceive the crowded conditions as stressful would be increased in situations requiring the coordination of one's own activities with that of others. In view of the fact that a task designed to maximize group interaction was used in the present study, the failure to achieve significant overall decrements of task performance as a function of density supports Freedman *et al.*'s contention that crowding does not function as an ordinary aversive stimulus capable of impairing complex task performance.

The present study was the first investigation to examine the effects of crowding on verbal behavior of adolescents. The fact that some of the findings of this study ran counter to some of the findings of studies examining the effects of crowding on social behavior of children is not surprising, since these studies differed greatly in terms of both the activity and architecture of the experimental setting and the ages of the subjects. Studies of children

have used highly unstructured free play situations with portable toys and little or no furniture. The present study was relatively structured in that group activities were determined by the experimenter, and that the setting was equipped with furniture. Although the method by which the groups were to construct the model was left unstructured, it is possible that the presence of the table and individual chairs helped to establish personal boundaries and provided an individual territory for each subject. Loo stated that if "territories are equal and determined beforehand, ambiguity and anxiety over one's personal territory and possessions are eliminated" (21, pp. 4-5). She suggests that this type of arrangement may reduce the probability that a state of crowdedness would be experienced and/or result in different behavioral effects than more unstructured situations.

In any case, crowding does appear to have had major effects on social interaction. In the present study, these effects were seen as an intensification of the process of social interaction as indicated by the increase in verbal behavior as a function of density. This increase in social interaction may reflect a higher level of arousal in crowded conditions. Furthermore, the effects of crowding on verbal behavior appear to have interacted with the nature of group members' attraction toward one another. Crowding seems to have differentially affected verbal behavior in low attraction groups by decreasing social interaction, which may have been an adaptive strategy if one considers the fact that one does not usually seek to interact with those whom one dislikes.

If one concludes that crowding can intensify social interaction, then what is the nature of this process? Freedman (11) suggested that density, *per se*, should not necessarily be viewed as a social evil, and that density can intensify positive, as well as negative, aspects of social situations. The results of this investigation do not support the idea that crowding can intensify positive elements of a situation. Negative verbal behavior increased as a function of density, but there was no corresponding increase in positive verbal behavior. This finding supports the contention that crowding has indirect detrimental effects on human social behavior.

E. GENERAL DISCUSSION

Generalizations based on the results of these studies must be made with caution as there are obvious limitations inherent in a laboratory analogue. First, subjects in the high density conditions were aware of the fact that they would be exposed to the situation for only 40 minutes; this brief exposure to a very high density may result in entirely different effects than would

longer exposures to lower densities. For example, living in a crowded ghetto dwelling is undoubtedly phenomenologically quite different from a short wait in a packed elevator.

Second, the focus of this present study was on the effects of spatial rather than social density on group behavior. Spatial density research compares the behavior of groups of the same number in space of different sizes, while social density research compares the behavior of groups of different numbers in the same size space (21). It is possible that in high spatial density conditions, individuals are primarily affected by violation of previous expectations of personal distances (16) and/or by an awareness that the demand for space exceeds the available supply, resulting in a constriction of freedom of choice and behavior in the setting (26). On the other hand, in high social density conditions, individuals may be more affected by the awareness that one is receiving excessive social stimulation (7), that one's central nervous system is unable to process this overload of information (10), and/or that one is unable to pace and manage interaction with others on both psychological and interpersonal levels (31). Accordingly, these two variations of crowded conditions may lead to different phenomenological experiences, as well as different behavioral effects.

Third, one must be cautious in applying the results of studies with American subjects to different cultures, as cross-cultural responses to crowding may be quite variable (16). This consideration is particularly relevant in that it is generally felt that the effects of crowding are more pronounced in underdeveloped countries, such as numerous African and South American nations (9).

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SOME EFFECTS OF INITIAL ATTITUDE IMPORTANCE ON ATTITUDE CHANGE*¹

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SUMMARY

Twenty students holding either important or moderately important initial attitudes wrote counterattitudinal essays to provide a test of competing predictions derived from Festinger's cognitive dissonance theory and Bem's self-perception theory. As expected by self-perception theory, subjects holding important initial attitudes showed less attitude change after counterattitudinal advocacy than did subjects holding moderately important initial attitudes. Additional data suggested that this differential attitude change was not attributable to a subject selection bias or to the production of differentially persuasive essays across the two importance conditions.

A. INTRODUCTION

The past two decades have witnessed considerable theoretical controversy over the determinants of attitude change observed in forced-compliance experiments. In the well known forced-compliance paradigm, a subject is induced to commit himself freely to behavior that is inconsistent with his own private attitudes. Dissonance theory (4, 5) predicts that a "forced-compliance" of this nature should produce an aversive psychological tension, cognitive dissonance, as the subject's behavior is clearly inconsistent in its implication with his initial attitudes. The subject is said to reduce this dissonance by changing his private attitudes to make them consistent with his recent (counterattitudinal) behavior.

Bem (1, 2, 3) rejects the notion that an aversive mediator such as cognitive dissonance is necessary to explain the attitude change observed in forced-compliance experiments. Bem's self-perception theory states that to the extent internal cues are weak, ambiguous, or uninterpretable, individuals will come to "know" their attitudes by inferring them from their behavior and/or its controlling circumstances. Accordingly, the subject who freely

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commits himself to counterattitudinal behavior is said to determine his attitude toward the issue in question by asking himself, "What must my attitude be if I was willing to behave as I have in this particular situation?" If the subject is offered minimal justification (e.g., minimal compensation, rewards, etc.) for his actions, he is said to answer this simple query by analyzing his behavior and concluding that his "true" attitude must be consistent with this recent behavior. Thus, self-perception theory argues that the attitude change observed in forced-compliance experiments results from rational analyses of attitude-relevant behaviors rather than from attempts to reduce cognitive dissonance.

From a self-perception perspective, it seems reasonable to predict that any cue that renders a subject's initial attitudes less ambiguous should reduce the subject's tendency to infer his "true" attitudes from his most recent behavior. There are potentially many attitude-relevant cognitions which may serve as internal discriminative cues or "anchors" that increase the salience of initial attitudes, and thereby limit the extent of a subject's attitude change in a forced-compliance setting. Attitude importance might serve such a discriminative or "anchoring" function; the greater the importance of one's initial attitude, the greater the discriminability and the anchoring of that attitude. This reasoning leads to the prediction that subjects who hold self-confessed, important initial attitudes are less likely to infer their attitudes from external cues (e.g., their recent behavior) and hence, are less likely to change their attitudes after counterattitudinal argumentation when compared to subjects who consider their initial attitudes less important.

It could be argued that dissonance theory makes a different prediction about the effects of initial attitude importance on attitude change. Festinger (5) argues that the magnitude of dissonance between two cognitive elements depends upon the importance of those elements; the greater their importance, the greater the experience of dissonance and the associated pressures for dissonance reduction. Thus, one might expect that subjects holding important initial attitudes will experience more dissonance over counterattitudinal argumentation than subjects holding less important initial attitudes. If subjects are led to believe that their behavior is open to the public so that it is not easily undone or denied, then it seems reasonable to predict that subjects with important initial attitudes will show more attitude change after counterattitudinal argumentation than will subjects holding less important initial attitudes. This latter prediction is at odds with the "anchoring hypothesis" derived from self-perception theory, and in this sense, places dissonance theory and self-perception theory in contention with one another. The present

experiment compares the attitude change produced by counterattitudinal advocacy for subjects holding important as compared to less important initial attitudes to provide a test of these competing predictions.

To date, all data reflecting on the dissonance *versus* self-perception controversy have been provided by either American or Canadian undergraduates. While the present study also utilizes American subjects, future research might well assume a cross-cultural posture. In this way, the generality of past results bearing on the controversy can be assessed, as it is conceivable that the outcomes favoring one theory in one culture may be contradicted by data collected in other cultural settings.

B. METHOD

1. *Subjects and Attitude Issue*

Forty females enrolled in an introductory psychology class served as subjects in two experimental sessions separated by an interval of one week. In the initial session, each subject completed a large number of questionnaires, including a social and campus issues questionnaire which assessed her attitudes toward 12 socially relevant issues and how important each of these stated attitudes was to her personally. The attitude judgments were obtained on 61-point horizontal scales labeled at 10-point intervals from strongly disagree to strongly agree, with the label of uncertain at the scale midpoint of 30. The judgments of attitude importance were obtained on nine-point scales with the endpoints appropriately labeled (e.g., under 1, unimportant and under 9, very important). First session responses indicated that female undergraduates generally agreed with the item "The government should do more in the fight against pollution," although they were clearly varied in the importance attributed to their initial attitudes on this issue. The pollution issue was selected as the target issue because it was the only issue on the social and campus issues questionnaire for which subjects were varied in the self-confessed importance of their own initial attitudes. On the other 11 issues, all subjects considered their initial attitudes to be relatively important (i.e., at least 7 on a 9-point scale).

2. *Experimental Design*

The self-confessed importance of subjects' initial attitudes on the "pollution" issue was the independent variable of primary concern in this experiment. Subjects were divided into an important attitude group and a moderately important attitude group on the basis of a median split of the perceived importance ratings of their own attitudes on the pollution issue.

Half of the subjects in each of the importance conditions were asked to write a counterattitudinal essay arguing that the government was doing more than its fair share in the fight against pollution (essay condition), and half were not asked to write essays (no-essay control condition), yielding a 2×2 factorial design.

3. Procedure

Upon their arrival for the second session, subjects who were to write essays were greeted by an experimenter they had not seen in Session I who described himself as the project director. Subjects were informed that the purpose of the session was to collect arguments representing divergent points of view on controversial social issues. The project director led subjects to believe that the arguments they produced would be used to structure the format for discussion and debate in advanced undergraduate contemporary issues seminars sponsored by the psychology department. Subjects were then told to take a few minutes to read the written instructions. The instructions informed them that the issue this week concerned the role of government in pollution control and that they would be asked to write one- to two-page essays arguing either that the government is or is not doing its fair share to halt the spread of pollution in this country. Thus, subjects had a free choice as to the direction they might take in developing their essays. The instructions went on to state that past experience with projects of this nature indicated that a wider range of well developed arguments resulted when subjects committed themselves to their arguments by signing their essays. Thus, subjects were led to believe that they would be required to affix their signatures to their essays prior to submitting them to the project director.

To insure that subjects wrote counterattitudinal essays, an addendum sheet was inserted between the written instructions and the blank sheets provided for essay writing. The addendum stated that the project had collected more than enough arguments to support the idea that the government is *not* doing its fair share in the fight against pollution, and that essays which argue that the government is doing more than its fair share to combat pollution would be appreciated. The addendum concluded by thanking subjects in advance for their efforts.

After subjects had read the instructions, the project director asked them to begin their essays. Subjects were allowed 15 minutes to develop and transcribe their thoughts. After completing their essays, subjects responded anonymously to two questionnaires. The first was a social issues questionnaire on which subjects indicated their current attitudes toward the 12 issues

(including the pollution issue) that they had responded to in the first session and 12 additional social issues that were interspersed among the 12 original issues. This questionnaire was employed in an attempt to reinforce the cover story and thus minimize subjects' perceptions that the intent of the essays was to produce attitude change. On the second questionnaire, subjects indicated the *mental effort*, *mental discomfort*, and *interest value* associated with the task of essay writing, how *justified* the project was for collecting class materials from introductory psychology students, and how *free* they had felt to decline to write the requested essay. These questionnaire ratings were made on seven-point scales with the endpoints labeled as appropriate for the question (i.e., 7 always indicated more of an attribute). Subjects were then interviewed to assess their awareness of the experimental hypotheses and/or the intent of the essays, debriefed, and dismissed.

The experimental procedure was apparently successful at diverting subjects' attention from the true purpose of the experiment. No one had to be discarded for failing to write a counterattitudinal essay. When the project director solicited questions, comments, and suspicions at the end of the session, the most frequent subject queries involved the possibility of their future participation in the contemporary issues seminars. Once informed of the deception, not one of the subjects guessed the hypotheses or stated that she thought the essays were designed to produce attitude change. When later informed of the true hypotheses, 19 of the 20 subjects who wrote essays argued that their data would show that the attitudes toward the pollution issue had not changed from Session I to Session II.

C. RESULTS

1. *Manipulation Checks*

Subjects' ratings of the importance attributed to their initial attitudes on the "pollution" target issue were subjected to a 2×2 analysis of variance to insure that attitude importance was successfully varied across the two importance conditions. The analysis revealed that attitude importance was successfully varied, as the mean importance rating assigned to initial attitudes by subjects in the important attitude condition (8.40 out of 9.00 possible) was significantly greater than that (6.45) assigned by subjects in the moderately important attitude condition ($F = 58.25$, $df = 1/36$, $p < .001$). Subjects who wrote essays did not differ from no-essay control subjects in the importance attributed to their initial attitudes on the pollution issue, and the interaction was not significant.

Subjects' initial attitudes toward the pollution issue were subjected to a

2 \times 2 analysis of variance to insure that any obtained differences in attitude change across the two importance conditions are not attributable to differences in the extremity of subjects' initial attitudes. This preliminary analysis indicated that subjects in the four experimental groups did not differ in initial attitude extremity, as none of the obtained F ratios was greater than 1.

Subjects who wrote essays completed a short questionnaire designed to assess their reactions to various aspects of the project. The item measuring perceived freedom served as a check on the requirement that subjects perceive themselves free to choose to participate in counterattitudinal argumentation before experiencing any dissonance over its commission (4). The analysis of variance for this item indicates that subjects holding important initial attitudes did not differ in their perceived freedom of choice as compared to subjects holding moderately important initial attitudes ($F < 1$). The two means for the free choice item were 6.60 and 6.65 (out of a possible 7.00), suggesting that perceived freedom was high for all subjects who wrote essays.

2. *Attitude Change*

An attitude change score was determined for each subject by calculating the difference between her pre-and posttest attitudinal responses to the target issue. A negative difference score represents attitude change in the direction advocated by the subject's counterattitudinal essay. For the no-essay control subjects, a negative difference score represents change in the same direction as in the essay condition (e.g., toward the scale midpoint), and provides a check on the magnitude of regression effects. Table 1 shows the magnitude of attitude change for each of the four experimental groups.

The analysis of variance of subjects' attitude change scores indicates that all effects are at least marginally significant. Subjects who wrote essays showed more attitude change than did the no-essay control subjects ($F = 20.86$, $df = 1/36$, $p < .001$). Thus, the attitude change of subjects who wrote essays represents more than a simple regression effect. Of greater interest is the finding that subjects holding self-confessed, important initial attitudes showed significantly *less* attitude change than their counterparts holding moderately important initial attitudes ($F = 5.91$, $df = 1/36$, $p < .02$). This finding lends support to the self-perception prediction that the greater the importance of one's initial attitude the greater the discriminability and/or anchoring of that attitude, and hence, the less the need to infer one's attitude from one's most recent behavior. Individual comparisons based on the marginally significant interaction ($F = 3.75$, $df = 1/36$, $p < .06$)

TABLE 1
MEAN ATTITUDE CHANGE FOR THE FOUR EXPERIMENTAL CONDITIONS

Treatment	Attitude importance	
	Important	Moderately important
Essay	-7.20 _a	-21.30 _b
No-essay control	+ .30 _c	- .30 _c

Note: Means in each row and column with subscripts in common do not differ significantly at the .05 level by the Newman Keuls test. Each mean is based on an *N* of 10.

indicate that although subjects in both essay writing groups showed significantly more attitude change than subjects in their respective no-essay control groups, the postessay attitude change of subjects holding important initial attitudes was significantly less ($p < .01$) than that of their counterparts holding moderately important initial attitudes.

It is possible that subjects in the important attitude condition showed less attitude change than subjects in the moderately important attitude condition for reasons unrelated to the hypothesized "anchoring effect" of initial attitude importance. This same outcome would be expected by self-perception theory if subjects with important initial attitudes had written relatively less forceful and/or less persuasive essays. As a check on this possibility, two judges, blind as to subjects' experimental classifications, rated the essays for persuasiveness and for the number of theme-consistent arguments presented. The persuasiveness ratings were made on a five-point Likert scale labeled at unit intervals from -2 (not at all persuasive) to +2 (extremely persuasive). The correlations obtained for the judges' ratings of essay persuasiveness and number of theme-consistent arguments were +.76 and +.97, respectively. The ratings of both judges indicate that subjects in the two importance conditions did not differ in the number of theme-consistent arguments contained in their essays or in the persuasiveness of their essays.

Zimbardo (9) has argued that the act of counterattitudinal argumentation may initially be perceived as a boring and/or worthless venture. Any dissonance resulting from the expenditure of valuable effort on such a boring task could conceivably be reduced by means other than attitude change (7, 9). For example, the counterattitudinal advocate in the present study might reduce dissonance by (a) enhancing the task of essay writing, viewing it as an interesting and worthwhile outlet for her valuable efforts, or (b) derogating the justification of the project, thus effectively denying the importance of her efforts and/or the importance of the position taken in her essay. The analyses of subjects' ratings of task interest and project justifica-

tion indicate that subjects in the important and the moderately important attitude conditions did not differ on either of these measures (both F 's < 1). In addition, subjects in the two importance conditions did not differ in their perceptions of mental effort ($F < 1$) or mental discomfort ($F < 1$) associated with essay production.

As attitude importance was varied by selection rather than manipulated, it could be argued that personality differences are responsible for both the differential importance ratings and the differential attitude change observed across the two importance conditions. However, it must be noted that subjects in the two importance conditions did not differ in (a) the importance attributed to their own initial attitudes on any of the other 11 issues on the social and campus issues questionnaire, (b) their postessay attitude change toward these 11 "non-target" issues, or (c) their perceptions of any other aspect of the experiment as indexed by the second experimental questionnaire. Taken together, these findings suggest that the differential ratings of initial attitude importance and the differential attitude change observed across the two importance conditions were specific to the target issue and, thus, were not likely the result of pervasive personality differences.

D. DISCUSSION

The "anchoring hypothesis" derived from self-perception theory states that certain attitude-relevant cognitions serve as internal cues or "anchors" that increase the salience of initial attitudes and, thereby, limit the extent to which subjects in forced-compliance experiments will infer their attitudes from their most recent behavior. Attitude importance is said to serve such an anchoring function; the greater the self-confessed importance of one's initial attitude, the greater the discriminability and/or anchoring of that attitude. The data of the present experiment are consistent with the anchoring hypothesis and inconsistent with the hypothesis derived from dissonance theory, as subjects holding important initial attitudes showed significantly *less* attitude change after counterattitudinal argumentation when compared to subjects holding moderately important initial attitudes.

While the attitude change data provide support for the anchoring hypothesis, these data alone should not be interpreted as providing a critical test of self-perception *versus* dissonance formulations. A dissonance theorist could argue that ratings of attitude importance represent nothing more than a measure of the subject's commitment to her initial attitude, and that increasing commitment (importance) increases the resistance to change of that attitude, thereby affecting the kinds of attempts to reduce dissonance that

may occur (4). The implication is that subjects holding important initial attitudes experienced more dissonance over their counterattitudinal advocacy than subjects holding moderately important initial attitudes, but that they reduced this dissonance by means other than (and/or in addition to) attitude change.

Questionnaire data collected from subjects who wrote counterattitudinal essays provide an opportunity to evaluate the dissonance formulation outlined above. Recent literature (6, 7, 8) indicates that subjects in the "high dissonance" conditions of forced-compliance experiments report the experience of more aversive mental discomfort (the conceptual analogue of dissonance) associated with their induced compliance than subjects exposed to conditions thought to produce low levels of dissonance. In the present experiment, subjects holding important attitudes did not differ from those holding moderately important attitudes in their ratings of aversive mental discomfort associated with their counterattitudinal argumentation. This outcome casts doubt on the proposition that subjects in the two importance conditions differed in their experience of dissonance. In addition, subjects in the important and the moderately important attitude conditions did not differ in their attempts to reduce dissonance by (a) enhancing the task of essay writing, thus viewing it as an interesting and worthwhile outlet for their valuable efforts, or (b) by derogating the justification of the project, and thus devaluing the importance of their efforts and/or the position taken in their essays.² Thus, the questionnaire data provide no evidence that subjects holding important initial attitudes either experienced any more dissonance than their counterparts holding moderately important initial attitudes, or that they made greater use of alternative modes of dissonance reduction. While dissonance theory is capable of generating an explanation for the dampening effect of attitude importance on attitude change, the failure to find supporting evidence for this explanation suggests that the anchoring explanation derived from self-perception theory is the more tenable of the two.

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² As all subjects were led to believe that they were publicly committed to their essays, it is difficult to argue that they reduced dissonance by denying that they had produced the arguments contained therein.

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CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfilm Publications.

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NAME STYLES IN AMERICA AND NAME STYLES IN NEW ZEALAND*

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A number of researchers have suggested that the way one signs one's name presents certain cues to the writer's personality. Recently, Boshier,¹ investigating the preferred "name styles" of New Zealanders, found that those who signed their names using a style employing abbreviations of the first two names (i.e., J. Q. Public) tended to be more conservative than those who wrote their first names out. He explains this finding, following Hartman's² earlier suggestion, in terms of conservative respondents revealing, through their choice of name style, "a lack of self-disclosure." He goes on to suggest that "the habitual nonuse of one's first name seems compatible with a lack of authenticity, self-rejection, and insecurity."

A similar study has been performed on 172 California junior college students, with results differing from Boshier's. The students ranged in age from 17 to 64, with the distribution skewed toward the younger end; as a group they were younger than the New Zealand subjects (adult students, prison workers, and Army personnel).

There was a major difference in the typical name style preferred by the two groups: whereas the preferred style for the New Zealanders was J. Q. Public (56%), with J. Public second (14%), and John Public third (11%), the California respondents preferred John Public (61%) and John Q. Public (30%), with the remaining 9% divided among a number of styles.

* Received in the Editorial Office, Provincetown, Massachusetts, on August 27, 1974. Copyright, 1975, by The Journal Press.

¹ Boshier, R. Name style and conservatism. *J. Psychol.*, 1973, 84, 45-53.

² Hartman, A. A. Name styles in relation to personality. *J. Gen. Psychol.*, 1958, 59, 289-294.

In addition, though Boshier found no significant differences related to age or sex, the California respondents differed significantly on each of these variables. Subjects who signed their names using the John Q. Public name style were, on the average, older than those who used John Public ($t = 2.28$, $df = 60$, $p < .03$). Similarly, men were significantly more likely than women to use the middle initial ($\chi^2 = 10.37$, $df = 1$, $p < .01$). Earlier studies³ have demonstrated that the addition of a middle initial to one's signature is related to advances in status. With this in mind, the differences between younger and older respondents and between men and women can be considered indicative of the relative statuses of the various groups: older people have more status than younger people, and (as feminists and chauvinists alike well know) men have more status than women.

There were no significant differences ($p < .05$) on any of the 18 scales of the California Personality Inventory between those who used the name style John Q. Public and those who used John Public. Also, there was no control for those persons who have no middle name, but a brief survey of the student directory indicated that for the American sample this is relatively rare, slightly below 4% of the students; Boshier makes no mention of it.

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³ Zweigenhaft, R. Signature size: A key to status awareness. *J. Soc. Psychol.*, 1970, 81, 49-54.

SUPERNATURAL BELIEFS AMONG INDIAN UNIVERSITY STUDENTS*

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The Index of Supernatural Beliefs (ISB)¹ was administered to an undergraduate sample of 191 male students (mean age 20.3 years) and 142 female students (mean age 17.4 years) drawn from colleges of education and arts in Amritsar, India. The 10 ISB items are concerned with traditional beliefs about twins, ghosts, birthdays, adultery, illness due to enemies, magical threats, dwarfs, fortune tellers, and witchcraft. Total belief in any of these items is scored 2 points, and qualified belief 1 point, thus giving a possible maximum ISB score of 20.

The main findings were that there was no significant difference between Hindus and Sikhs, although *intensity* of religious belief was a significant factor—the deeply religious scoring significantly higher than the rest on the ISB (means were 8.06 and 6.95, respectively, ($t = 3.28$, $p < .01$). There were no significant differences in ISB scores associated with subject studied (education or arts), sex, severity of upbringing (rated on a three point scale), age, or literacy in the home (whether first, second, or third generation). Thus among these Indian students only intensity of religious beliefs affected the ISB scores.

The ISB scores of this Indian sample can be compared with the scores of Jahoda's¹ sample of 280 Ghanaian students. The Indians scored significantly higher than the Ghanaians (means were 7.47 and 6.67, respectively, $t = 3.24$, $p < .01$). However the Ghanaians were older than the Indian sample and among the Ghanaians the older students scored significantly lower on the ISB. When the means of the Ghanaian samples aged under 25 years are compared with the Indians' score, the differences are not significant.

The high overall mean ISB score of the Indian students suggests that Indian university education has had insufficient impact on traditional beliefs if these are regarded as an obstacle to the growth of technology.

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* Received in the Editorial Office, Provincetown, Massachusetts, on August 28, 1974. Copyright, 1975, by The Journal Press.

¹ Jahoda, G. Supernatural beliefs and changing cognitive structures among Ghanaian university students. *J. Cross-Cult. Psychol.*, 1970, **1**, 115-130.

AGGRESSION IN INDIAN SOCIETY: AN ANALYSIS OF FOLK TALES*

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Defining aggression as an attempt by an individual or a group to inflict physical injury on another individual or a group, without a consideration of whether this attempt was successful, the present study analyzed 166 folk tales from seven Indian provinces. The method used was a content analysis with the coding unit being an incident of aggression. Each incident was coded under three main categories: (a) type of aggression, (b) instrument of aggression, and (c) relationship between the characters. Each category was divided into further subcategories, the whole methodological framework being an extension and modification of studies carried out earlier by Slater¹ and Stephens.²

Under the assumption, widely accepted in psychological anthropology, that dramatic treatment of interpersonal patterns in folk tales directly mirrors the modal patterns of the culture, this method of content analysis proved useful in discovering regional differences and similarities in aggressive behavior in the Indian setting.

Specifically, the findings indicated that the aggression index for each province was highly correlated with the frequency of successful and attempted homicides rather than with other forms of aggression. Aggression in the same sex-dyads was significantly higher than in cross-sex dyads, the only exception being the province of Bengal which showed an opposite tendency. Findings on aggression in the family showed sibling rivalry to be extremely low. Aggressive acts were primarily initiated by the parents and parent surrogates, murderous attacks by parents on children being significantly greater than those by children, pointing to the rarity of aggressive rebellion against parents and parent surrogates in the Indian society. Aggression in the cross-sex dyads in the family normally stopped short of complete annihilation of the victim, whereas no such restriction applied in the case of same-sex dyads. Indexes for father-son conflict were compiled for each province and compared with similar indices of so called "primitive" societies in

* Received in the Editorial Office, Provincetown, Massachusetts, on September 12, 1974. Copyright, 1975, by The Journal Press.

¹ Slater, P. E. *The Glory of Hera*. Boston: Beacon Press, 1968.

² Stephens, W. N. *The Oedipus Complex*. Glencoe: Free Press, 1962.

the study by Stephens. In comparison to the frequencies given in that study the father-son conflict in India is of a low intensity. The mother-son conflict, especially high in the province of Bengal, was attributed to an intense and unconscious experience of the mother in her destructive, threatening aspect in that part of the country. The discussion of this finding, as well as of all the other major findings, was in the light of psychoanalytic theory.

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REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, **97**, 295-296.

REGRESSION EFFECT IN INTERPERSONAL JUDGMENT*

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When a subject rates the likableness of a stimulus person several times, his response may differ as a function of the judgment trials. Using moderately favorable and moderately unfavorable adjectives, Sloan and Ostrom¹ have demonstrated that set-size (i.e., number of items) of information typically interacts with the judgment trials. That is, impressions evoked by sets having eight isovalent traits depolarize over trials, while judgments based upon two isovalent adjectives get more and more polar. This probable reduction of the set-size effect over judgment trials may be regarded as a case of the *regression effect*.²

As Sloan and Ostrom had held the mean likableness of the sets of two and eight adjectives constant, it appears reasonable to assume that their *regression effect* is attributable to the *size* of sets. Such an interpretation would also follow from Anderson's model.³ There is, however, an alternative interpretation. It is probable that sets varying in *size* differ vis-à-vis their overall meaning and that the greater the number of isovalent traits in a set, the greater is the polarization of global meaning.⁴ Accordingly, the depolarization of impression over trials can hold true even with repeated judgments of a *single polar* trait. For such a polar trait, the meaning-shift interpretation therefore

* Received in the Editorial Office, Provincetown, Massachusetts, on August 27, 1974. Copyright, 1975, by The Journal Press.

¹ Sloan, L. R., & Ostrom, T. M. Amount of information and interpersonal judgment. *J. Personal. & Soc. Psychol.*, 1974, **29**, 23-29.

² Guilford, J. P. *Psychometric Methods*. New York: McGraw-Hill, 1954.

³ Anderson, N. H. Information integration theory: A brief survey. Technical Report, University of California, San Diego, La Jolla, 1972.

⁴ Singh, R. Two tests of meaning-shift in adjective combinations and interpersonal judgments. Paper presented at the Midwestern Psychological Association meeting, Chicago, 1973.

predicts a decrease in response extremity over trials analogous to the effect of eight-item set in the Sloan and Ostrom study. A set-size interpretation, on the contrary, predicts an increase in the polarity of impression over trials similar to the trend noted with the two-item set. The present experiment tested the plausibility of these two contradictory predictions.

Forty students from Purdue University formed impressions of 20 stimulus persons, each described by one adjective, and rated their likableness on a 21-point scale.⁵ Of the 20 adjectives, 10 were favorable and 10 were unfavorable.⁶ The design was a 2×10 factorial, having two trait-values and 10 judgment trials. The 10 traits were counterbalanced over the 10 trials through a 10×10 Latin square.

Results evinced a clear-cut depolarization in impression over the 10 judgments. The mean polarity scores for the 10 successive trials were 18.05, 17.40, 17.64, 17.61, 17.89, 16.35, 17.49, 16.83, 17.11, and 17.09. The differences across trials were significant ($F = 3.16$, $df = 9/351$, $p < .001$), concentrating in linear trend ($F = 7.98$, $df = 1/39$, $p < .0001$). Judgments evoked by one-trait sets in this study thus paralleled the trend observed with the eight-item set in the Sloan and Ostrom study. This confirmed the notion of meaning-shift over set-sizes of information.

If it is assumed that sets varying in the number of isovalent items differ in their global meaning, the depolarization effect with the one-item set noted here and the eight-item set in the Sloan and Ostrom study is explained through reference to a simple process.

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⁵ For the sake of simplicity in interpretation, the subjects' ratings were converted into polarity scores similar to those of Sloan and Ostrom.

⁶ Anderson, N. H. Likeableness ratings of 555 personality-trait words. *J. Personal. & Soc. Psychol.*, 1968, 9, 272-279.

LEVEL OF MORAL JUDGMENT AS A FUNCTION OF SEX AND SEX ROLE IDENTITY*

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The cognitive-developmental view of moral judgment (see Kohlberg)¹ does not posit systematic sex differences in maturity of moral reasoning. Both confirming (e.g., Keasey)² and contradicting (e.g., Aron³ and Caring⁴) evidence have been reported. It would be consistent with the cognitive-developmental view to hypothesize differences in maturity of moral judgment where socialization experiences related to role taking opportunities and other disequilibrium inducing experiences can be shown to differ systematically (as Kohlberg has reported for cultural and social class differences). There is ample evidence to indicate that within sexes those individuals with more traditional sex role identities (i.e., masculine males and feminine females) have childhoods characterized by not only fewer but less complex and more rigid role-taking opportunities and related experiences (see, for example, Kagan and Moss,⁵ and Mussen and Rutherford⁶). The present investigation was an attempt to explore further the issue of sex differences in moral judgment by considering the added dimension of sex role identity.

The sample consisted of 31 male and 47 female introductory psychology students at Ohio University; they were predominantly Caucasian and from the lower-middle to middle social classes. The experimenter (male Caucasian) administered the paper-and-pencil version of Kohlberg's moral dilemmas. Blind scoring by Kohlberg's global method was performed by the experimenter and a trained assistant (interjudge reliability of $r = .81$), and subjects were assigned stage scores from 1.0 to 6.0. To determine traditionality

* Received in the Editorial Office, Provincetown, Massachusetts, on September 9, 1974. Copyright, 1975, by The Journal Press.

¹ Kohlberg, L. Stage and sequence: The cognitive-developmental approach to socialization. In D. A. Goslin (Ed.), *Handbook of Socialization Theory and Research*. Chicago: Rand-McNally, 1969. Pp. 347-480.

² Keasey, C. B. The lack of sex differences in the moral judgments of preadolescents. *J. Soc. Psychol.*, 1972, **86**, 157-158.

³ Aron, R. D. The effects of arousal upon emotional responsiveness to others as a function of level of moral development. Unpublished Doctoral dissertation, University of Connecticut, Storrs, 1972.

⁴ Caring, L. C. The relation of cognitive style, sex and intelligence to moral judgment in children. Unpublished Doctoral dissertation, New York University, 1970.

⁵ Kagan, J., & Moss, H. A. *Birth to Maturity*. New York: Wiley, 1962.

⁶ Mussen, P., & Rutherford, E. Parent-child relations and parental personality in relation to young children's sex-role preferences. *Child Devel.*, 1963, **34**, 589-607.

of sex role identity, subjects were divided at the median of the distribution of scores on the Guilford-Zimmerman M-F Scale for their respective sex (20/21 for males, 10/11 for females).

A 2×2 ANOVA on moral judgment scores by sex and sex role identity showed no main effects, but a highly significant interaction term ($F = 10.80$, $p < .001$) indicating that nontraditional sex role identities were associated with higher moral judgment scores. Mean moral judgment scores (in stages) were as follows: Feminine Females, 3.42, $n = 23$; Masculine Males, 3.56, $n = 16$; Feminine Males, 3.91, $n = 15$; Masculine Females, 4.42, $n = 24$. t -tests showed that all nonadjacent means in this sequence differed significantly (all p s at least $< .05$).

These results indicate that while males and females on the average did not employ differing underlying principles in their reasoning, it is apparent that within the sexes those with nontraditional sex role identities developed more sophisticated moral concepts.

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THE FACILITATION OF ANONYMOUS HELPFULNESS BY A FORTUITOUS PLEASANT EVENT*

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In recent years there have been many studies of the social and personal determinants of helping behavior among Americans. While these studies have greatly increased our understanding of helpful behavior, very few have attempted to demonstrate simple ways of increasing helpfulness in the natural environment. Isen and Levine¹ reported that the fortuitous discovery of a dime in the coin return of a pay telephone greatly increased helpfulness. They reported that 88% of the subjects finding a dime later assisted an unknown stranger who dropped an armload of papers, while only 4% of the control subjects (those who did not find a dime), assisted the stranger. Their results suggested that even a trivial fortuitous event may produce a massive increase in helpfulness. In a society in which the lack of interpersonal helpfulness appears to be one of the major problems of the times, Isen and Levine's results, if replicated, have important theoretical and social implications.

Helpfulness was measured by the lost-key technique of Forbes, TeVault and Gromoll.² Small keys of the type typically used in automobile ignitions were attached to tags bearing the name and address of a private individual. These keys were left in public pay telephones in downtown St. Louis and at the St. Louis airport. The finder of a key would presumably assume that it was lost and could choose to assist the owner by returning it at his own expense. Keys were left in a total of 98 phone booths. A dime was placed in the coin return of 44 phones, and the remaining 54 telephones were used as controls. It was found that 32% of the keys left in control phone booths were returned, while 55% of the keys left in experimental phone booths were returned. A chi square test of independence indicated that the presence of a dime greatly increased the frequency of key returns ($\chi^2 = 5.30$, $df = 1$, $p < .05$). This result replicates Isen and Levin's finding that a trivial fortuitous event (finding a dime) tends to increase helpfulness.

* Received in the Editorial Office, Provincetown, Massachusetts, on September 9, 1974. Copyright, 1975, by The Journal Press.

¹ Isen, A. M., & Levin, P. F. Effect of feeling good on helping: Cookies and kindness. *J. Personal. & Soc. Psychol.*, 1972, **21**, 383-388.

² Forbes, G. B., TeVault, R. Kent, & Gromoll, H. F. Regional differences in willingness to help strangers: A field experiment with a new unobtrusive measure. *Soc. Sci. Res.*, 1972, **1**, 415-419.

In the Isen and Levin experiment the fortuitous event occurred in privacy, while the helpful act was a personal and public gesture, whereas in the present experiment both the fortuitous event and the helpful act were totally private. Although both experiments indicate that rather large increases in helpfulness may be obtained from apparently trivial experimental manipulations, neither study attempted to determine why a trivial event increases helpfulness. The observed effect may be the direct result of increased altruistic motivation. However, it is equally possible that finding and keeping a dime that clearly does not belong to the finder may arouse guilt and what appears to be an altruistic act may, in fact, represent an attempt at guilt reduction through compensatory behavior.

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DEMAND CHARACTERISTICS AND DISCLOSURE RECIPROCITY*

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Research¹ among college students and Americans in general indicates that intimacy of personal disclosure increases as a function of the intimacy level of disclosure input from an initial discloser. These results are somewhat surprising, since studies of friendship formation find that self-disclosure develops gradually in a relationship.²

The notion of demand characteristics³ may explain disclosure reciprocity in laboratory experiments. In the typical study Ss enter an ambiguous situation, and the *E* states that he is investigating such topics as "person perception" or "the sociology of conversation." Ss are told that they are expected to talk about themselves to either the *E* or another *S*. Someone other than the *S* talks first. Ss may use the cues provided by the other person's disclosure to guide their own reactions as to what is appropriate behavior. Thus, disclosure reciprocity may represent a laboratory artifact.

To test this explanation, an intimacy by demand characteristics interaction was predicted: Ss would reveal more personal information as a function of intimacy input only in a situation which emphasizes the demand characteristics connected with self-disclosure.

Sixty female undergraduate students participated in the experiment. They met individually with a female confederate who revealed (in 1½ minutes) either superficial (low intimacy) or personal (high intimacy) information about herself. Half of the Ss expected that they would talk about themselves as part of an experiment on impression formation (high demand characteristics); the other half had no such information conveyed to them (low demand characteristics). In the low demand characteristics condition, the confederate "spontaneously" revealed intimate or superficial information, while both were waiting for the *E* to arrive.

* Received in the Editorial Office, Provincetown, Massachusetts, on September 12, 1974. Copyright, 1975, by The Journal Press.

¹ Chaikin, A. L., & Derlega, V. J. *Self-Disclosure*. Morristown, N.J.: General Learning Press, 1974.

² Altman, I., & Taylor, D. A. *Social Penetration*. New York: Holt, Rinehart & Winston, 1973.

³ Orne, M. T. On the social psychology of the psychological experiment: With particular reference to demand characteristics and their implications. *Amer. Psychol.*, 1962, **17**, 176-183.

Two measures of *S* self-disclosure—an intimacy rating on a nine point scale by two "blind" judges and length of time talking—were obtained by means of a hidden tape recorder. *Ss* were completely debriefed at the end of the session.

The intimacy input manipulation was effective. Confederate's intimacy was rated higher in the high (7.734) than the low intimacy (4.967) condition ($F = 61.196, p < .001$). *Ss* talked more intimately in the high (3.731) than in the low intimacy (2.634) condition ($F = 15.565, p < .001$). Disclosure was also greater in the high (3.815) than in the low demand characteristics (2.550) condition ($F = 20.730, p < .001$). *Ss* talked longer in high (158.833 secs.) than in the low demand characteristics (106.233) condition ($F = 11.866, p < .001$). No other significant effects occurred on this measure.

Regardless of the extent *Ss* thought they might have to talk about themselves, intimacy of self-disclosure increased as a function of intimacy input. The demand characteristics connected with self-disclosure influenced only the overall amount of information which *Ss* revealed. The absence of a significant intimacy by demand characteristics interaction on the disclosure measures does not support the notion that demand characteristics mediate disclosure reciprocity in laboratory experiments.

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CURRENT PROBLEMS AND RESOLUTIONS

Under this heading appear summaries of data which, in 500 words or less, would increase our comprehension of socially compelling problems, hopefully move us somewhat closer to a solution, and clearly show promise of transcending their own origin in the Zeitgeist; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting supplementary material from Microfiche Publications.

The Journal of Social Psychology, 1975, **97**, 303-304.

ADDITIONAL DIMENSIONS OF INTERNAL-EXTERNAL CONTROL*

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Mirels¹ presented empirical evidence indicating that Rotter's I-E scale² is not unidimensional, but can be separated into two clusters of items: those concerning felt mastery over one's own life, and those concerning the impact of people in general on political or world affairs. Abramowitz³ found that while the total score on the Rotter scale was unrelated to political activity, scores on the Mirels political cluster were significant predictors of political participation. However, before one can dismiss the usefulness of a generalized expectancy orientation in favor of situation-specific items, further clarification is needed.

Rotter's I-E scale has another important weakness in addition to combining item content (nonpolitical and political) and frame of reference (first-person and third-person). The forced-choice scale does not differentiate between those with expectancies that chance is in control and those who believe that powerful others play an important role in their lives, but categorizes both types under the rubric of externals.

Levenson developed three generalized locus of control scales which measure

* Received in the Editorial Office, Provincetown, Massachusetts, on September 11, 1974. Copyright, 1975, by The Journal Press.

¹ Mirels, H. L. Dimensions of internal versus external control. *J. Consult. & Clin. Psychol.*, 1970, **34**, 226-228.

² Rotter, J. B. Generalized expectancies for internal versus external control of reinforcement. *Psychol. Monog.*, 1966, **80**(1), Whole No. 609.

³ Abramowitz, S. I. Internal-external control and social-political activism. *J. Consult. & Clin. Psychol.*, 1973, **40**, 196-201.

belief in chance as separate from a powerful others or internal orientation.⁴ Previous work with the Internal (I), Powerful Others (P), and Chance (C) scales has led to a better understanding of the phenomenological variables involved in membership in antipollution groups, perceived parental upbringing, psychopathological diagnoses, and clinical improvement. It is reasoned that Mirels' political items might be more predictive of behavior than Rotter's overall I-E scale score, not because of specific item content, but because all of Mirels' items refer to the social system (powerful others) rather than to chance forces. The purpose of the present study was to assess the degree to which items on Mirels' political factor are related to a generalized expectancy of control by powerful others.

Sixty male undergraduates were administered the I, P, and C scales presented as a unified attitude scale of 24 items in a Likert format (range on each scale = 0-48). Subjects then responded on a Likert six-point scale to the four pairs of political items that loaded $\pm .30$ or greater for men on Mirels' second factor and a fifth pair of political items used in the Abramowitz study (range on Mirels' Factor II = 0-60).

Two equal groups of extreme scorers on Mirels' factor were selected ($N = 28$). Differences between these two groups on the I, P, and C scales were analyzed by three t tests. As predicted, the only significant difference appeared with the P scale. Subjects who rejected the idea that a citizen can exert control over world affairs perceived that they were more controlled by powerful others in their *daily lives* ($M = 23.86$) than those who felt that an individual could have an impact ($M = 14.57$, $p < .05$). These results are noteworthy when one realizes that none of the items on the P scale refers to political or world events and that these generalized locus of control items were administered to the subjects prior to the specific Mirels items.

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⁴ Levenson, H. Multidimensional locus of control in psychiatric patients. *J. Consult. & Clin. Psychol.*, 1973, 41, 397-404. Perceived parental antecedents of internal, powerful others, and chance locus of control orientations. *Devel. Psychol.*, 1973, 9, 260-265. Activism and powerful others: Distinctions within the concept of internal-external control. *J. Personal. Assess.*, 1974, 38, 377-383.

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ABBREVIATIONS OF WORDS USED IN THE TITLES OF JOURNALS

(One-word titles are never abbreviated. The word "the" is not used, nor its equivalent in any other language. The word "of" or its equivalent in other languages is used only to discriminate what would otherwise be identical titles in different languages. The word "and" is always used, but indicated by "&" in the Roman alphabet. Only English words are indicated here, but the corresponding words in other languages should receive a corresponding abbreviation. All abbreviations and all one-word titles should be in italics.)

Abnormal	<i>Abn.</i>	Japanese	<i>Jap.</i>
Abstracts	<i>Abst.</i>	Journal	<i>J.</i>
American	<i>Amer.</i>	Mathematical	<i>Math.</i>
Anatomy	<i>Anat.</i>	Measurement	<i>Meas.</i>
Animal	<i>Anim.</i>	Medical	<i>Med.</i>
Applied	<i>Appl.</i>	Mental	<i>Ment.</i>
Archives	<i>Arch.</i>	Monographs	<i>Monog.</i>
Association	<i>Assoc.</i>	Neurology	<i>Neurol.</i>
Attitude	<i>Attit.</i>	Opinion	<i>Opin.</i>
Australian	<i>Aust.</i>	Orthopsychiatry	<i>Orthopsychiat.</i>
Behavior	<i>Behav.</i>	Personality	<i>Personal.</i>
British	<i>Brit.</i>	Personnel	<i>Person.</i>
Bulletin	<i>Bull.</i>	Philosophy	<i>Philos.</i>
Bureau	<i>Bur.</i>	Physics	<i>Phys.</i>
Canadian	<i>Can.</i>	Physiology	<i>Physiol.</i>
Character	<i>Charac.</i>	Proceedings	<i>Proc.</i>
Children	<i>Child.</i>	Psychiatry	<i>Psychiat.</i>
Chinese	<i>Chin.</i>	Psychoanalysis	<i>Psychoanal.</i>
Clinical	<i>Clin.</i>	Psychology	<i>Psychol.</i>
College	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
Comparative	<i>Comp.</i>	Quarterly	<i>Quart.</i>
Consulting	<i>Consult.</i>	Religious	<i>Relig.</i>
Contributions	<i>Contrib.</i>	Research	<i>Res.</i>
Development	<i>Devel.</i>	Review	<i>Rev.</i>
Educational	<i>Educ.</i>	School	<i>Sch.</i>
Experimental	<i>Exper.</i>	Science	<i>Sci.</i>
General	<i>Gen.</i>	Social	<i>Soc.</i>
Genetic	<i>Genet.</i>	Statistics	<i>Stat.</i>
Indian	<i>Ind.</i>	Studies	<i>Stud.</i>
Industrial	<i>Indus.</i>	Teacher	<i>Teach.</i>
International	<i>Internat.</i>	University	<i>Univ.</i>
Italian	<i>Ital.</i>		

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1. The proper sequence for the parts of your submitted manuscript is as follows: (a) text, (b) references, (c) footnotes, (d) tables, (e) figures, and (f) figure legends. However, monographs start with a table of contents and may have an acknowledgment page before the text and an appendix immediately after the text.
2. Use heavy typewriter paper, $8\frac{1}{2} \times 11$ inches, double-space all lines, and leave margins for editorial work. Do not use onionskin, odd sizes, and abrasive or wax finishes.
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6. A summary at the beginning of the text is required for articles over 500 words.
7. Each quotation should indicate the page number of the original source. The original publisher must give permission for lengthy quotations and use of tables or figures.
8. Do not fold your manuscript.
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FORMAT AND SPECIFIC INSTRUCTIONS

A. TEXT DIVISIONS

1. THE TITLES OF JOURNAL ARTICLES AND THE MAJOR SUBDIVISIONS OF MONOGRAPHS ARE PRINTED IN TEN-POINT CAPS CENTERED ON THE PAGE

- A. THE NEXT SUBDIVISION TITLE IS PRINTED IN CAPS AND SMALL CAPS CENTERED ON THE PAGE
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